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CONGRESSES AND CONFERENCES HELD BY THE INSTITUTE.

LEAMINGTON, 1877.

President—B. W. RICHARDSON, M.D., LL.D., F.R.S.

Presidents of Sections.

Sec. I.—Edwin Chadwick, C.B.
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H. J. Strong, M.D.
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„ II.—R. Rawlinson, M.Inst.C.E., C.B.
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Chairman—
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Secretaries—
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Prof. H. Robinson, M.Inst.C.E.
III.—Arthur Mitchell, M.A., M.D., LL.D., F.R.S.

Officers of Local Committee.

Chairman—
The Worshipful The Mayor
(Jonathan Angus, Esq.).

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President—PROF. G. M. HUMPHRY, M.D., F.R.S.

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Chairman—
THE LORD PROVOST (The Honorable John Ure).

Secretaries—
J. B. RUSSELL, M.D., JAMES SELLARS and HENRY JOHNSTON.

DUBLIN, 1884.

President—SIR ROBERT RAWLINSON, C.B.

Presidents of Sections.

Sec. I.—T. W. GRIMSHAW, M.A., M.D.
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THE RT. HONBLE. THE LORD MAYOR.

Secretaries—
JOHN BEVERIDGE.
CHARLES A. CAMERON, M.D.
J. J. DIGGLES LA TOUCHE, M.A.
THOMAS A. DREW, Q.H.A.
WILLIAM R. MAGUIRE, F.R.MET.SOC.

LEICESTER, 1885.

President—PROF. F. DE CHAUMONT, M.D., F.R.S.

Presidents of Sections.

Sec. I.—ARTHUR RANSOME, M.A., M.D., F.R.S.
„ II.—PERCIVAL GORDON SMITH, F.R.I.B.A.
„ III.—WILLIAM MARCET, M.D., F.R.MET. SOC., F.C.S., F.R.S.

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Chairman—
THE WORSHIPFUL THE MAYOR (Alderman Hart).

Secretaries—
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YORK, 1886.

President—SIR SPENCER WELLS, BART.

Presidents of Sections.

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„ III.—WILLIAM WHITAKER, B.A., F.G.S.

Officers of Local Committee.

Chairman—
THE RT. HONBLE. THE LORD MAYOR.

Secretary—
S. W. NORTH, M.R.C.S.

BOLTON, 1887.

President—RIGHT HON. LORD BASING, F.R.S.

Presidents of Sections and Conference.

Sec. I.—PROF. J. RUSSELL REYNOLDS, M.D., F.R.S.
II.—PROF. T. HAYTER LEWIS, F.S.A., F.R.I.B.A.
III.—PROF. A. DUPRÉ, PH.D., F.I.C., F.C.S., F.R.S.

Conference of Medical Officers of Health.
PROF. W. H. CORFIELD, M.A., M.D.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR (Alderman Fletcher).

Secretaries—
R. G. HINNELL.
E. SERGEANT, L.R.C.P., M.R.C.S.
MARSHALL ROBINSON.

WORCESTER, 1889.

President—G. W. HASTINGS, M.P., J.P.

Presidents of Sections and Conference.

Sec. I.—GEORGE WILSON, M.A., M.D.
„ II.—HENRY J. MARTEN, M.INST.C.E.
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Conference of Medical Officers of Health.
PROF. W. H. CORFIELD, M.A., M.D.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR
(Ald. Ernest Day, J.P., F.R.I.B.A.)
Secretaries—
W. STRANGE, M.D.
HORACE SWETE, M.D.

BRIGHTON, 1890.

President—SIR THOMAS CRAWFORD, K.C.B., M.D.

Presidents of Sections & Conferences.

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„ III.—WILLIAM TOPLEY, F.R.S., F.G.S.
Conference of Medical Officers of Health.
ARTHUR NEWSHOLME, M.D., D.P.H.
Conference of Inspectors of Nuisances.
ALFRED CARPENTER, M.D., M.R.C.P., D.P.H.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR.
(Alderman Manwaring, J.P.).
Secretary—
A. NEWSHOLME, M.D.

PORTSMOUTH, 1892.

Hon. President—H.R.H. THE DUKE OF CONNAUGHT, K.G.
President—SIR CHARLES CAMERON, M.D., F.R.C.S.I., D.P.H.
Presidents of Sections and Conferences.

Sec. I.—PROF. J. LANE NOTTER, M.D.
„ II.—JAMES LEMON, M.INST.C.E., F.R.I.B.A.
„ III.—W. J. RUSSELL, PH.D., F.R.S.
Conference of Naval and Military Hygienists.
INSP.-GENL. J. D. MACDONALD, M.D., F.R.S.
Conference of Medical Officers of Health.
PROF. C. KELLY, M.D.
Conference of Municipal and County Engineers.
H. PERCY BOULNOIS, M.INST.C.E.
Conference of Sanitary Inspectors.
PROF. A. WYNTER BLYTH.
Conference on Domestic Hygiene.
LADY DOUGLAS GALTON.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR
(Alderman T. Scott Foster, J.P.).
Secretaries—
ALEXANDER HELLARD.
B. H. MUMBY, M.D., D.P.H.

LIVERPOOL, 1894.

President—SIR FRANCIS SHARP POWELL, BART., M.P.
Presidents of Sections and Conferences.

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Conference on Mercantile Marine Service.
SIR W. B. FORWOOD.
Conference of Medical Officers of Health.
CHARLES E. PAGET, M.R.C.S., M.O.H.
Salford.
Conference of Municipal and County Engineers.
A. M. FOWLER, M.INST.C.E.
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FRANCIS VACHER, F.R.C.S.
Conference of Ladies on Domestic Hygiene.
THE LADY MAYORESS OF LIVERPOOL.

Officers of Local Committee.

Chairman—
THE LORD MAYOR (The Rt. Hon.
William B. Bowring).
Secretaries—
H. PERCY BOULNOIS, M.INST.C.E.
E. W. HOPE, M.D., D.SC.

NEWCASTLE-UPON-TYNE, 1896.

President—RIGHT HON. EARL PERCY, P.C.

Presidents of Sections and Conferences.

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„ III.—W. H. DINES, B.A., F.R.Met.Soc.

Conference of Port Sanitary Authorities.
A. HOLT BARBER.

Conference of Medical Officers of Health.
ALFRED HILL, M.D., F.R.S.E., F.I.C.

Conference of Municipal and County Engineers.
F. J. C. MAY, M.Inst.C.E.

Conference of Sanitary Inspectors.
G. REID, M.D., D.P.H.

Conference on Domestic Hygiene.
THE MAYORESS OF NEWCASTLE.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR (Councillor Riley Lord).

Secretaries—
H. E. ARMSTRONG, D.Hy.
J. W. HEMBROUGH, M.D.

LEEDS, 1897.

President—ROBERT FARQUHARSON, M.D., F.R.C.P.Lond., M.P., D.L., J.P.

Presidents of Sections and Conferences.

Sec. I.—T. PRIDGIN TEALE, M.A., M.B.Oxon., F.R.C.S., F.R.S.

„ II.—LEWIS ANGELL, M.Inst.C.E., F.R.I.B.A.

„ III.—WILLIAM WHITAKER, B.A., F.R.S., F.G.S., Assoc.Inst.C.E.

Conference on River Pollution.
MAJOR LAMOROCK FLOWER, F.R.Met.Soc.

Conference of Municipal Representatives.
COUNCILLOR B. WOMERSLEY.

Conference of Medical Officers of Health.
EDWARD SEATON, M.D., F.R.C.P., F.C.S.

Conference of Municipal and County Engineers.
THOMAS HEWSON, M.Inst.C.E.

Conference of Sanitary Inspectors.
PETER FYFE, F.R.S.Edin.

Conference of Ladies on Domestic Hygiene.
MRS. FAWKES.

Officers of Local Committee.

Chairman—
THE RT. HONBLE. THE LORD MAYOR (Sir J. Kitson, Bt., M.P.).

Secretaries—
J. SPOTTISWOODE CAMERON, M.D., B.Sc.
A. E. PEARSON, M.R.C.S., L.R.C.P.
W. SPINKS, Assoc.M.Inst.C.E.

BIRMINGHAM, 1898.

President—SIR JOSEPH FAYRER, Bt., K.C.S.I., M.D.Edin., F.R.C.P.Lond., M.R.C.S.Eng., LL.D.Edin. and St. And., Q.H.P., F.R.S.

Presidents of Sections and Conferences.

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„ II.—W. HENMAN, F.R.I.B.A.

„ III.—G. SIMS WOODHEAD, M.D., F.R.C.P., F.R.S.Edin.

Conference of Municipal Representatives.
ALDERMAN W. COOK, J.P.

Conference of Medical Officers of Health.
JOHN C. McVAIL, M.D., D.P.H., F.R.S.E., F.S.S.

Conference of Municipal and County Engineers.
T. DE COURCY MEADE, M.Inst.C.E., F.G.S.

Conference of Sanitary Inspectors.
W. W. WEST.

Conference of Ladies on Domestic Hygiene.
THE LADY MAYORESS (Mrs. C. G. Beale).

Officers of Local Committee.

Chairman—
THE RT. HONBLE. THE LORD MAYOR (Councillor Charles G. Beale).

Secretaries—
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W. BAYLEY MARSHALL, M.Inst.C.E.
J. E. WILLCOX, Assoc.M.Inst.C.E.

SOUTHAMPTON, 1899.

President—SIR WILLIAM H. PREECE, K.C.B., F.R.S., PRES.INST.C.E.

Presidents of Sections and Conferences.

Sec. I.—SIR JOSEPH EWART, M.D., F.R.C.P., M.R.C.S., J.P.

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III.—PROF. PERCY F. FRANKLAND, PH.D., B.SC., F.R.S.

Conference of Municipal Representatives.
ALDERMAN THOMAS WALTON, J.P.

Conference of Port Sanitary Authorities.
MILLAR WILKINSON, C.C.

Conference of Medical Officers of Health.
T. ORME DUDFIELD, M.D., M.R.C.S., L.R.C.P.

Conference of Medical Officers of Schools.
CHARLES E. SHELLY, M.A., M.D., M.R.C.P.LOND., M.R.C.S.ENG.

Conference of Engineers and Surveyors to County & other Sanitary Authorities.
E. PURNELL HOOLEY, ASSOC.M.INST.C.E.

Conference of Veterinary Inspectors.
W. HUNTING, F.R.C.V.S.

Conference of Sanitary Inspectors.
CHARLES MACMAHON.

Conference of Ladies on Domestic Hygiene.
MRS. CONSTANCE PATEY.

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W. B. G. BENNETT, ASSOC.M.INST.C.E.
W. MATTHEWS, M.INST.C.E.
C. H. RUSSELL, M.R.C.S., D.P.H.

CONFERENCE ON THE HOUSING OF THE WORKING CLASSES.

LONDON, 1900.

Chairmen—
R. MELVILLE BEACHCROFT, L.C.C.
SIR SYDNEY H. WATERLOW, Bart.

PARIS, 1900.

President—PROF. W. H. CORFIELD, M.A., M.D.OXON., F.R.C.P.LOND.

Presidents of Conferences.

Conference of Medical Officers of Health.
A. WYNTER BLYTH.

Conference of Engineers & Surveyors to County and other Sanitary Authorities.
T. DE COURCY MEADE, M.INST.C.E., F.G.S.

Conference of Sanitary Inspectors.
W. H. GRIGG.

Chairman of Local Committee—
PROF. GRÉHANT, President of Société Française d'Hygiène.

Secretaries—
DR. FOVEAU DE COURMELLES.
CECIL NICHOLSON.
DR. BLAYAC.
M. JOSEPH DE PIETRA SANTA.

CONFERENCE ON WATER SUPPLIES AND RIVER POLLUTION.

LONDON, 1901.

Chairmen—
PROF. H. ROBINSON, M.INST.C.E.
W. WHITAKER, B.A., F.R.S., F.G.S., ASSOC.INST.C.E.

An Exhibition of Water Supply Fittings was held in connection with this meeting.

MANCHESTER, 1902.

President—RT. HON. EARL EGERTON OF TATTON.

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Conference of Port Sanitary Authorities.
ALDERMAN WALTON SMITH, J.P.

Conference of Medical Officers of Health.
JAMES NIVEN, M.A., M.B.

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Conference of Veterinary Inspectors.
W. AUGUSTUS TAYLOR, F.R.C.V.S.

Conference of Sanitary Inspectors.
W. BLAND.

Conference of Ladies on Hygiene.
Mrs. W. O. MEEK.

Conference on Hygiene of School Life.
PROF. C. S. SHERRINGTON, M.A., M.D., F.R.S.

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Deputy Chairman—
ALDERMAN ALEX. MCDOUGALL, J.P.

Secretary—
J. H. REYNOLDS, M.SC.

BRADFORD, 1903.

President—RIGHT HON. THE EARL OF STAMFORD.

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„ II.—MAURICE FITZMAURICE, C.M.G., M.INST.C.E.

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Conference of Municipal Representatives.
Councillor W. C. LUPTON.

Conference on Industrial Hygiene.
PROF. THOMAS OLIVER, M.A., M.D., F.R.C.P.

Conference of Medical Officers of Health.
J. SPOTTISWOODE CAMERON, M.D., B.SC., C.M.

Conference of Engineers & Surveyors to County & other Sanitary Authorities.
T. H. YABBICOM, M.INST.C.E.

Conference of Veterinary Inspectors.
CHARLES DRABBLE, M.R.C.V.S.

Conference of Sanitary Inspectors.
ISAAC YOUNG.

Conference of Ladies on Hygiene.
Mrs. J. A. GODWIN.

Conference on the Hygiene of School Life.
JAMES KERR, M.A., M.D., D.P.H.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR (Alderman David Wade, J.P.).

Vice-Chairman—
COUNCILLOR J. A. GODWIN, J.P.

Secretary—
W. ARNOLD EVANS, M.D., D.P.H.

GLASGOW, 1904.

President—THE RIGHT HON. LORD BLYTHSWOOD.

Presidents of Sections and Conferences.

Sec. I.—Prof. J. Glaister, M.D., D.P.H., F.C.S., F.R.S.E.

„ II.—Prof. H. Robinson M.Inst.C.E.

„ III.—Prof. F. Clowes, D.Sc., F.I.C., F.C.S.

Conference of Municipal Representatives. Councillor W. F. Anderson, J.P.

Conference on Industrial Hygiene. Councillor J. Steele, J.P.

Conference of Medical Officers of Health. Sir Charles A. Cameron, C.B., M.D., F.R.C.S.

Conference of Engineers & Surveyors to County & other Sanitary Authorities. William Weaver, M.Inst.C.E.

Conference of Veterinary Inspectors. Prof. J. McCall, F.R.C.V.S.

Conference of Sanitary Inspectors. T. F. Strutt.

Conference of Women on Hygiene. Her Grace the Duchess of Montrose.

Conference on the Hygiene of School Life. Prof. J. Edgar, M.A., &c.

Officers of Local Committee.

Chairman—
Sir John Ure Primrose, Bart., (Lord Provost).

Vice-Chairman—
Councillor W. F. Anderson, J.P.

Secretary—
John Lindsay, Solicitor and Clerk, Police Dept.

Conference on School Hygiene.

LONDON, 1905.

President—Sir ARTHUR RUCKER, M.A., D.Sc., LL.D., F.R.S.

Chairmen—

Sir Lauder Brunton, LL.D., M.D., D.Sc., F.R.C.P., F.R.S.
Rt. Hon. Lord Reay, G.C.S.I., G.C.I.E., LL.D., D.L., J.P.
Sir William Anson, Bart, D.C.L., M.P.
Sir James Crichton Browne, M.D., LL.D., F.R.S., J.P.
Sir William Collins, Kt., M.D., M.S., D.L., B.Sc., F.R.C.S., J.P.
The Rt. Rev. The Lord Bishop of Hereford (J. Percival, D.D.).

An Exhibition of School Building and Furnishing Appliances was held in connection with this meeting.

Conference on Smoke Abatement.

LONDON, 1905.

President—Sir OLIVER LODGE, F.R.S., D.Sc., LL.D.

Chairmen—

Sir George Livesey, M.Inst.C.E., M.I.M.E.
Sir William H. Preece, K.C.B., M.Inst.C.E., F.R.S.
Sir William B. Richmond, K.C.B., R.A., L.C.C.

An Exhibition of Smoke Abatement Appliances was held in connection with this meeting

BRISTOL, 1906.

President—THE RIGHT HON. SIR EDWARD FRY, P.C., B.A., D.C.L., LL.D., F.R.S., F.S.A., F.L.S.

Presidents of Sections and Conferences.

Sec. I.—Sir Wm. J. Collins, M.D., F.R.C.S., B.Sc., D.P.H., J.P., M.P.

,, II.—Edwin T. Hall, V-P.R.I.B.A.

,, III.—W. N. Shaw, M.A., D.Sc., F.R.S.

Conference of Municipal Representatives. Councillor Colston Wintle, M.R.C.S.

Conference of Medical Officers of Health. D. S. Davies, M.D., D.P.H.

Conference of Engineers and Surveyors to County and other Sanitary Authorities. H. Percy Boulnois, M.Inst.C.E.

Conference of Veterinary Inspectors. Frank Leigh, F.R.C.V.S.

Conference of Sanitary Inspectors. A. E. Hudson.

Conference of Women on Hygiene. Her Grace the Duchess of Beaufort.

Conference on the Hygiene of School Life. The Right Rev. the Lord Bishop of Hereford.

Officers of Local Committee.

Chairman—
Councillor Colston Wintle, M.R.C.S.

Vice-Chairman—
Alderman G. Pearson.

Secretary—T. J. Moss-Flower, Assoc.M.Inst.C.E.

Conference at DUBLIN, 1907.

Patron—HIS EXCELLENCY THE RT. HON. THE EARL OF ABERDEEN, K.T., P.C., K.C.M.G., Lord-Lieutenant of Ireland.

President—THE RT. HON. THE EARL OF ROSSE, K.P., F.R.S., D.C.L., LL.D.

Chairmen—

Sir Charles A. Cameron, C.B., M.D., F.R.C.S.I., D.P.H., Ph.D.
P. C. Cowan, B.Sc., M.Inst.C.E.
Sir John William Moore, M.D., D.P.H., Hon.D.Sc.Oxon., F.R.C.P.I.

Hon. Secretaries—

D. Edgar Flinn, D.P.H., F.R.C.S.I.
W. Kaye-Parry, M.A., M.Inst.C.E., F.R.I.B.A.

Second International Congress on School Hygiene.

LONDON, 1907.

An Exhibition of School Building and Furnishing Appliances was arranged by the Institute in connection with this Congress.

CARDIFF, 1908.

President—THE RIGHT HON. THE EARL OF PLYMOUTH, P.C.
(Lord-Lieutenant of Glamorganshire.)

Presidents of Sections and Conferences.

Sec. I.—D. S. DAVIES, M.D., D.P.H.
„ II.—SIR HENRY TANNER, I.S.O., F.R.I.B.A.

Conference of Municipal Representatives.
Councillor J. ROBINSON, L.R.C.P.

Conference of Port Sanitary Authorities.
Councillor JOHN UTTING, M.R.C.S.

Conference of Medical Officers of Health.
E. WALFORD, M.D., D.P.H.

Conference of Engineers and Surveyors to County and other Sanitary Authorities.
A. E. COLLINS, M.INST.C.E.

Conference of Veterinary Inspectors.
PROF. J. PENBERTHY, F.R.C.V.S.

Conference of Sanitary Inspectors.
G. H. ANDERSON.

Conference of Women on Hygiene.
Hon. President,
THE COUNTESS OF PLYMOUTH.
President,
THE LADY MAYORESS OF CARDIFF.

Conference on the Hygiene of School Life.
H. GRIFFITHS, M.A., SC.D., F.R.S.

Officers of Local Committee.

Chairman—COUNCILLOR JAMES ROBINSON, L.R.C.P. Vice-Chairmen—(7).
Secretaries—E. WALFORD, M.D., D.P.H.; W. WILLIAMS, M.A., M.D., D.P.H.

LEEDS HEALTH CONGRESS, 1909.

President—COL. T. W. HARDING, LL.D., J.P., D.L.

Secretaries—J. SPOTTISWOODE CAMERON, M.B., B.SC., M.O.H., Leeds.
ROBERT E. FOX, Town Clerk, Leeds.

On the invitation of the Lord Mayor of Leeds, the Council, instead of arranging a Congress of the Institute in 1909, co-operated with the City of Leeds and other bodies in organising the Leeds Health Congress. No Exhibition was held in connection with the meeting.

BRIGHTON, 1910.

President—THE HON. SIR JOHN A. COCKBURN, K.C.M.G., M.D.

Presidents of Sections and Conferences.

Sec. I.—PROF. E. W. HOPE, M.D., D.SC.
„ II.—HENRY ROFE, M.INST.C.E., F.G.S.

Conference of Municipal Representatives.
THE WORSHIPFUL THE MAYOR (Alderman Edward Geere).

Conference of Port Sanitary Authorities.
CHAIRMAN, PORT OF LONDON SANITARY AUTHORITY (Wm. H. Williamson).

Conference of Medical Officers of Health.
E. SERGEANT, L.S.SC., L.R.C.P., M.R.C.S.

Conference of Engineers and Surveyors to County & other Sanitary Authorities.
P. H. PALMER, M.INST.C.E.

Conference of Veterinary Inspectors.
W. HUNTING, F.R.C.V.S.

Conference of Sanitary Inspectors.
W. G. COOPER.

Conference of Women on Hygiene.
THE COUNTESS OF CHICHESTER.

Conference on Hygiene of Childhood.
SIR WM. J. COLLINS, M.P., D.L., M.D.

Officers of Local Committee.

Chairman—
THE WORSHIPFUL THE MAYOR.

Secretary—
DUNCAN FORBES, B.SC., M.D., D.P.H.

BELFAST, 1911.

Patron—HIS EXCELLENCY THE EARL OF ABERDEEN, K.T., P.C., K.C.M.G. (Lord Lieutenant of Ireland.).

President—THE RIGHT HON. LORD DUNLEATH, D.L., J.P.

Presidents of Sections and Conferences.

Sec. I.—SIR T. LAUDER BRUNTON, Bart., M.D., F.R.C.P., LL.D., F.R.S.

„ II.—W. KAYE-PARRY, M.A., M.INST.C.E.

Conference of Municipal Representatives.
THE LORD MAYOR OF BELFAST (Councillor R. J. M'Mordie, M.A., M.P.).

Conference of Port Sanitary Authorities.
COUNC. ROBT. THOMSON, M.B., J.P.

Conference of Medical Officers of Health.
SIR CHARLES A. CAMERON, C.B., M.D.

Conference of Engineers and Surveyors.
P. C. COWAN, D.Sc., M.INST.C.E.

Conference of Veterinary Inspectors.
J. A. JORDAN, M.R.C.V.S.

Conference of Sanitary Inspectors.
DAVID RUTHERFORD.

Conference of Women on Hygiene.
THE LADY MAYORESS OF BELFAST.

Conference on the Hygiene of Childhood.
SIR JOHN WILLIAM BYERS, M.A., M.D.

Officers of the Local Committee.

Chairman—THE LORD MAYOR OF BELFAST.

Secretaries—

H. W. BAILIE, L.R.C.P., D.P.H. JAMES MUNCE, M.INST.C.E. J. G. HARRIS.

SOUTH AFRICAN BRANCH.—CAPE TOWN, 1911.

President—SIR FREDERICK DE WAAL, KT., Administrator of the Province of the Cape of Good Hope.

Chairman of Council—A. H. REID, F.R.I.B.A.

Hon. Secretary—A. JASPER ANDERSON, M.A., M.B., D.P.H.

YORK, 1912.

Patron—H.R.H. PRINCE ARTHUR OF CONNAUGHT, K.G., G.C.V.O.

President—HIS GRACE THE LORD ARCHBISHOP OF YORK (The Right Hon. and Most Rev. Cosmo Gordon Lang, D.D.)

Presidents of Sections and Conferences.

Section A. Sanitary Science and Preventive Medicine.
SIR SHIRLEY F. MURPHY, F.R.C.S.

Section B.—Engineering and Architecture.
J. WALKER SMITH, M.INST.C.E.

Section C.—Domestic Hygiene.
MRS. EDWIN GRAY.

Section D.—Hygiene of Infancy and Childhood.
MRS. H. SCHARLIEB, M.D., M.S.

Section E.—Industrial Hygiene.
SIR THOMAS OLIVER, M.D., LL.D., F.R.C.S.

Conference I.—Municipal Representatives
THE RIGHT HON. THE LORD MAYOR OF YORK (Ald. Norman Green).

Conference II. Medical Officers of Health.
PROF. A. BOSTOCK HILL, M.D., D.P.H.

Conference III. Engineers and Surveyors.
A. D. GREATOREX, M.INST.C.E.

Conference IV. Veterinary Inspectors.
PROF. J. R. U. DEWAR, F.R.C.V.S.

Conference V.—Sanitary Inspectors.
T. G. DEE.

Officers of Local Committee.

Chairman—THE RIGHT HON. THE LORD MAYOR OF YORK.

Secretaries—

H. CRAVEN. E. M. SMITH, M.D., D.P.H. F. W. SPURR.

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CONGRESS AT YORK.

SECTION C.—DOMESTIC HYGIENE.

Presidential Address, by Mrs. Edwin Gray, President of the Section.

PERSONAL RESPONSIBILITY FOR PUBLIC HEALTH.

I AM one of those who have for many years watched with keen interest all movements having for their object the improvement of health and of health conditions. I have tried to understand them and the facts upon which they were based, and to keep in touch with developments as they arose. We have arrived at a point when no one would care to deny that the good health of the people should be one of the most important objects of good government, whether national or local. It is also fully realised (to quote the words of the majority report of the Poor Law Commission) that "to the extent to which we can eliminate or diminish sickness among the poor, we shall eliminate or diminish one half the existing amount of pauperism"; words not very different, however, to those used by Sir Edwin Chadwick and Mr. Nassau Senior, over seventy years ago!

The various suggestions and movements having improved health as their object, speaking broadly, rest upon two lines of thought; the obligation of the State to take action when the need is proved, and the personal responsibility of the individual. The greatest problem of the immediate future is how to bring them into proper relation.

Both these lines of thought are vital to true progress. The wish blending of the two in laws, in the administration of the laws, and in all

action for the common weal, is necessary. The one seeks to improve conditions, to exercise control when those conditions fall below a certain accepted standard, in other words, to remove, as Canon Barnett says, the "stumble blocks in the way of the weak." The other seeks to draw out the capacity of the individual, and to deepen his sense of responsibility for his own character and actions, and for the welfare of the community of which he is one.

We see that communal action is constantly increasing; the question naturally arises, will individual effort so vital to the welfare of the nation survive, and not only survive, but grow?

It has been freely said, during these later years, that all action by the State or municipality would discourage and obliterate private effort and initiative, and would lead to a want of self-reliance. It is impossible to deny that there is danger in this direction, if the personal responsibility of individual is not fully recognised, and is not continually pressed home, strengthened and enforced. But it is instructive and hopeful to find that in Denmark, for instance, where the laws relating to the stamping out of consumption are the most complete in Europe, and where the local authorities have autocratic powers, the effect has been rather to increase the sense of personal responsibility in the individual than to weaken it. This is shown by the fact that one in fourteen of the population is a paying member of a health society, and that no country can show a more varied number of voluntary institutions, whether for the prevention and cure of that disease, or for any other good purpose.

Again, in our own country, the medical inspection of school children revealed the existence of so many defects, both in town and country children, that it seemed hopeless to deal with them unless by communal action. Local authorities have taken action in many places, but what has private initiative done? If you read the report of the chief medical officer to the Board of Education (Sir George Newman) you will see mention of much voluntary work and initiative. There has resulted, for instance, the establishment of care committees, both in town and country, and (to mention only two out of many) such magnificent pieces of pioneer work as Miss Margaret McMillan's health centre at Deptford, where 7,000 children are treated at a cost of 3s. 3d. per head per year; and Lady Meyer's health centre and dental clinic at Newport, Essex.

I am glad to know that you will hear from Lady Meyer herself full particulars of her interesting experiment, and I suggest all should study the Deptford scheme.

State action need not necessarily eliminate private enterprise, provided

the State does not take action until the necessity for it to do so is proved, and provided we retain the spirit of citizenship in the individual. We find rather, to our surprise, that the need for voluntary supplementary work and workers is not lessened, but rather increased. We discover that State action, at any rate as regards the public health, tends to enforce the right action of the individual along general lines of good habits, and to press home his own personal responsibility, not only for his own good, but for the sake of his neighbours.

There is, indeed, a responsibility which lies upon each one of us who cares for public health, not only to know and believe the general laws of health, but more important still, to act upon them until it is part of our nature to do so. This sounds easy and obvious, but in reality it is not so. Much determination and self-control are needed. The open window at night is still rare, whether in town or village, after all these years of agitation and discussion. The atmosphere of nearly every public hall is close and vitiated. Trains, hotels, and restaurants are rarely allowed to be ventilated.

Again, science and nature alike tell us that pure good milk is the best food for infants. Does anyone dispute it? But what do we find? Doctors and nurses continually ordering and recommending patent foods, and their use increasing in institutions, even in those supported by the rates.

It will only be when a large majority of individuals believe with conviction in the laws of wholesome living, and act upon that belief, that those who have to administer the laws will be able properly to fulfil the obligations of the State. Then we may see that national health which Lecky tells us in his "Map of Life" is the surest way to national happiness.

To this end we women have a great personal responsibility of a very special and particular kind, one aspect of which, our work in the home, we are to consider to-day. For this special work much knowledge and preparation is needed, and the need grows as knowledge advances. There are many different opinions as to how and when this preparation should be made, but whatever opinion we hold as to that, I expect we are agreed that girls of all classes should be thoroughly trained in the home arts, and in the scientific basis upon which they rest. I would emphasise the words "all classes," for the subject is still very much neglected in the wealthier classes.

Let us view things sanely, and view them whole. Sometimes the ablest, in their anxiety to find a cure, will fix their attention upon one aspect of a question to the exclusion of others equally well founded. For instance, in discussing infant mortality and its causes, do not let us, like

many medical officers of health and speakers at congresses, talk as if ignorance and fecklessness of mothers were the principal if not the sole cause. Dr. Newsholme, in his report on infant and child mortality presented in 1910, makes special mention of twelve factors affecting infant mortality, and then remarks that the list is obviously incomplete. It certainly is, for inherited disease is not among them. While not denying that ignorance and lack of training is one important cause, and doing what we can to remove it, let us bear in mind and carefully study all the other causes: the ignorance of fathers, inherited disease, poverty, insanitation of every kind. Let us consider the difficulties and needs of the working mother more closely and sympathetically. Let us demand more accurate certification of the causes of death in infants, now admittedly imperfect, often indicating symptoms, not causes.

In conclusion, we must be students all our lives, gaining new knowledge, listening to new ideas, but weighing them carefully in the light of experience and history.

Teaching of Domestic Economy in Secondary Schools, by Miss D. E. Crick.

IT has been my privilege to take charge, during its first year, of the Domestic Science Course in the George Watson Ladies' College, Edinburgh. This course is to be of two years' duration; the girls eligible for it are those who have reached the lower division of the highest form in the school, their age at the beginning of the course being fifteen or sixteen years. They have had, during their previous work, a three years course of science, including botany. There are to be not more than fifteen girls in each class, and one class for each year.

In this first year's work, girls have had to be included who do not fully answer to these qualifications, which fact greatly increases the difficulty of deciding how far the work has been a success.

If girls decide to take the domestic course, they have to give up the idea of working for the University; the school, at this stage, being divided into domestic and University sides. The course is intended for girls who mean to remain at home, for those who are going to take up domestic science as a profession, and for those who wish to follow other professions which do not involve residence at a University; girls who intend to train in physical culture especially appreciate the course.

Upon entering the domestic side, the girls continue their general education with the rest of the school in the following subjects :—English, history, one language, and one supplementary subject, giving eleven and a half out of thirty-three periods per week to these subjects, a period being three-quarters of an hour, the remainder of the time being given to the special domestic subjects.

These subjects consist of cookery, laundry work, needlework, housewifery, applied science, hygiene, economics, and home problems; the periods per week being divided as follows:—Cookery 6, which are arranged in two sets of three consecutive periods; laundry work 4, in two sets of two consecutive periods; needlework 4; applied science, one set of three consecutive periods; economics 1½; hygiene 1; and home problems 1.

Home problems is the name given to lessons on the various pitfalls which beset the unskilled plunged into housekeeping, from asking for a servant's character to signing a cheque.

In cookery the syllabus includes the primary methods, with various examples from different kinds of foods, plain dishes being practised before anything more elaborate is attempted; special emphasis is laid on the choice and care of utensils.

During the first term and part of the second, one demonstration is given each week, but, as the girls proceed and learn the mechanical part of the work, less time is given to demonstration, and more to practice.

When once the girls have grasped the elementary principles, they are encouraged to be self-reliant and to trust to their own resources; they are expected to make out menus and to plan dinners for which they are entirely responsible. They are given the money and have to buy all the ingredients themselves. These dinners are used in the school, and when possible are consumed by special members of the staff, the girls waiting at table and arranging the whole dinner.

The laundry work is on two consecutive days, so that the clothes can be washed, dried, finished and taken home each week. The syllabus includes the washing and finishing of most articles in ordinary use, with the care and choice of utensils and cleansing materials. Demonstrations are given when necessary, but as much time as possible is devoted to practice.

The housewifery at present labours under the double disadvantage of only having one period per week given to it, and of having to be undertaken in the kitchen and laundry, not in a model dwelling. Whenever possible, however, the theories taught are put into practice, and different parts of the school are cleaned and kept in order.

All the girls do needlework in their ordinary school work, and in their special domestic course they learn and practice various darns and patches, and learn to draft, cut out and make themselves a skirt and bodice, learning also the use of a sewing machine.

In the applied science, the idea is to use the knowledge acquired by the girls during their three years' course of chemistry, physics, etc., so that by means of it they can understand, to a certain extent, the principles underlying the different processes in their cookery, laundry work and housewifery, with the reasons for the use of the different ingredients and utensils in these subjects. During the first year, most of the time is spent on the study of air and water, showing the aims and need of ventilation, hot water supplies, filtration, softening of waters, passing on to the agents used in this softening, and from thence to soap and to other cleansing and bleaching agents in house-work.

Towards the end of the first year, we take up the subject of food. The girls in their hygiene hours have been studying the requirements of life, and are now able to realise what compounds they need in their food, and the necessity of a mixed diet. They now learn the value of different foods, and the effects of heat, acids and ferments upon these foods; whenever possible they use the microscope in their examination of substances,

and at least two-thirds of the time is given up to practical work. The girls are encouraged to put the results learnt by their experiments in the science room to practical use in the kitchen and laundry, and to verify facts taught in these places by experiments in the science room.

The instruction that comes under the heading of Hygiene is based on the girls' knowledge of botany, and begins with a study of the requirements of life as shown by plants; from this we pass to simple forms of animal life, studying their needs and functions, moving gradually up the scale, and finally arriving at the human being. Then, in the second year, the different systems of the body are to be studied and compared with those already under observation; the care of infants will then be taught, followed by the hygiene of cleanliness, clothing, etc., instruction in first aid and in the care of the body; finally, the use of a house, ventilation, etc.; these last subjects are to be connected with work done in the first term Science, when air and water were studied.

In Economics, for the first year the general principles of the subject are very simply taken; an attempt is made to get the girls to realise what the subject means, and to trace the growth of civilization from early times, showing how the position of the household and of women has been affected by and has affected civilization. Then the factors in the production, consumption and exchange of wealth are considered, and the different theories about them. During the second year, we hope to have time to study the budgets of various classes (using for material those supplied by Mrs. Pember Reeves, the Board of Trade, and Miss Atkinson), to study women's wages, and having considered social problems, such as sweated labour and the housing problem generally, to try to realise women's especial relation to them as reformers, as sufferers, and also as contributors towards the evil.

Last on our syllabus comes home problems, which is, as I have already said, a course intended to explain some of the difficulties into which it is possible for a housewife to fall, and includes simple account keeping, the receipting of bills, the management of banking accounts, the investment of money, an explanation of rates and taxes, the use of Bradshaw, the demands of etiquette, etc. A great deal of this course can be connected with that on Economics; some with the Housewifery course, and some with the Hygiene course.

This briefly outlines what is the aim of our Domestic Science Course, but it will be impossible to gauge its success at present, especially as the girls who entered at the beginning of the session do not all fulfil the requirements which are to be enforced in the future. We are also

handicapped by the fact that the Scottish Board of Education does not recognise our subjects in granting its leaving certificate, nor will the authorities at the Cookery School grant any advantage to the girls who have completed our course, if they go on to train there, but these conditions have not influenced our numbers, and they may possibly be altered.

The girls are all keenly interested in the work, and seem to enjoy it; the applied science seems to be the most difficult part, but I consider this to be largely due to the fact that the girls' qualifications in science differed so widely that it was extremely difficult to arrange the work to suit all. The cookery has, I think, on the whole been the most popular, and the girls have certainly made great progress in this art. I understand that the course, as a whole, has greatly widened the girls' interests, that they now demand the why and wherefore of everything, and that they are occasionally rather a trial in other lessons as they wish to know the source of every substance that may be casually mentioned. In fact, I was asked by a colleague if architecture came under any of our subjects, as the domestic girls had been so especially interested when different types of architecture were mentioned. It is also encouraging to find that girls who were being permitted to leave school at the age of sixteen are asking to stay on longer so that they may take the domestic course; this has been the case both with girls who were to have stayed at home on leaving, and also with girls who intended to train for some profession.

I have found so far that girls keep much the same places with regard to each other in this course as they have done in their previous work; the only exceptions being where either girls who were fairly good all round have proved very dexterous in their handcraft, or where girls have taken a very special interest in the applied science. But girls who are backward in their ordinary work do not appear to shine in this special work. This may seem to be contradictory to the present day idea of the value of handcraft-training for the backward, dull girl, but the number is too small to generalise from. The work requires a fair amount of intelligence, and the girls have passed the age at which handcraft is enthusiastically recommended for the purpose of brain development.

The course I have tried to put before you is in brief a specialised domestic course, open to thirty girls during their last two years of school-life, and consequently falls under the second division of those schemes and methods reported on by the interim report.

For though there are many ways of treating domestic subjects and many schools are experimenting, there is at present no royal way, at least

there is no Board of Education way. The Board does not advise any special course, but has issued an interim report giving examples of methods followed in various secondary schools. For further information we have also got the memorandum on the teaching of housecraft in secondary schools issued by a special committee appointed by the Association of Teachers of domestic science.

It will be most satisfactory to consider the different schemes set forth in these two reports as belonging to one of three divisions. In the first case, domestic science is included in the time-table as an ordinary subject, with but a small proportion of time per week allotted to it, the actual housecraft being left to the last two years of school life; the time previous to this being given to needlework and to science which has a domestic basis. In the second, a specialised domestic course is given to girls during their last year or years at school. In the third, the work is not treated during school time at all, but a post-scholastic course is opened for "old girls."

The course which I have been conducting falls into the second division, and only fifteen girls can enter for it each year. But, as it is a specialised course, we are able to give nearly two-thirds of the school week to the domestic subjects, and so to have a wide syllabus, and to give much time to the art and practice of the work. When a course comes under the first division, all the girls in the school are able to benefit by it, but it seems possible to give to the subject only from one-ninth to one-quarter of the school week, and this last only in a very few cases. This shortage of time must cause great difficulties in teaching a subject of which so many of the branches demand a long consecutive period of work. It is almost impossible to get things finished in one lesson period, and the girls have to live by faith; we do such and such things, then such other things are the result. This kind of teaching has a fatal tendency to become pseudo-practical; it resembles that one-time science where the apparatus for the experiment was set up and the children were told what would happen if the master used appropriate chemicals. However, this danger can be guarded against, and then the choice remains: shall all the girls have a smattering, or a few do the work very thoroughly; or shall we leave the whole thing until school days are over? It may be urged that a post-scholastic course is superfluous, as the girls would do better to go to a domestic science school if their general education is finished; but there is a distinct demand for these courses, and many girls are eager to attend courses who would not be able to go to a domestic science school.

One reason for placing housecraft at, or after, the end of the school

career is that unless it is practical it is soon forgotten, and that the girls are not likely to be able to practise it until after leaving school. But this seems to me to be of much less importance when housecraft is correlated with science. The rules which were learnt through painful experience, and through failure (which has been a standing joke to the world, from the young wife's pies to the "jelly that won't jell"), are now made plain. Cooking and washing are no longer mysterious juggling feats which the uninitiated attempt with trembling hearts; the girls have seen the wool disappear under the action of the alkali, they have investigated the chemical action of baking powder. Their memory is helped since they have considered the subject from these different aspects; they have in many cases found out for themselves the why and the wherefore of their actions. But, though this correlation should help to keep the memory of the processes green, it does not make them easier mechanically, nor does it supply physical strength, and for these two reasons it may seem better to keep housecraft for the last years of school life.

In a course in any of the three divisions the method may vary considerably. One question arises about which there are two very distinct opinions: shall there be rigid correlation between science and the cookery, etc.? that is, shall the same foodstuffs, and only those, be treated simultaneously in laboratory and kitchen?

There are, no doubt, advantages in such a connection, but to me the disadvantages outweigh these; putting on one side any that may affect the science, it would be extremely difficult, if not impossible, to grade the mechanical processes of cookery in a satisfactory manner, if only the food materials, etc., treated at the time in the science room, were to be cooked in the kitchen. Also, I cannot help thinking, it would take away a great deal from the interest in the practical side of the subject, and even in the scientific. The girls naturally take much interest in their results; therefore, if the science tends to prevent variety and change in the said results, is it not likely to be regarded with disfavour? If, however, the housecraft is not tied to the science, but the two are closely connected whenever possible, the interest in both is greatly increased.

Another question on which there is much diversity of opinion is hygiene. The Report of the Board of Education notes three methods of teaching hygiene: first, as a separate subject, for the purely practical end of building up good habits; second, again as a separate subject, but as a science based on an elementary knowledge of physiology; third, incidentally, in connection with other subjects.

The second method seems to include any advantages which the others

may have, and also to possess so many of its own, that we should imagine that whenever possible it would be chosen; however, it is probably not always possible, and hygiene is such an important item in a girl's education, that the other methods are infinitely better than omitting it altogether.

A point in which our particular course differs from any quoted by the Board is by the inclusion of elementary economics. As to the value of this subject, let me quote from Professor Urwick's preface to a recently published book, "Economics: Descriptive and Theoretical," by Mrs. McKillop and Miss Atkinson. "What the young citizen of to-day wants to know, and needs to know, includes, at any rate, answers to some such questions as these: What place do we occupy in the system of industrial and social organization upon which our orderly life depends? What are the meaning and reason of the institutions and methods by which much of our activity is controlled or guided? What is the relative importance of various existing practices affecting the worker, the tax-payer, the housekeeper? . . . If they can learn to understand and realise a little of all this, their power to live well is increased, and the worth of their citizenship, of their membership of a great community, is raised to a higher level."

In this paper I have said nothing about the wisdom of teaching domestic subjects in a secondary school. By now that is thoroughly recognised, and it is almost unnecessary to offer further evidence, still I think that the experience we have had at the George Watson Ladies' College has been most encouraging. I should feel inclined to lay most stress on the attitude of mind aroused in the girls.

The chief points to be discussed are the organisation and the method of teaching. These must necessarily vary according to the circumstances of each school. I have tried to show those employed in the school in which I teach, and to give our reasons for teaching what and how we do. It is only a half finished experiment, which has been very interesting to work. I have tried to classify very roughly the various schemes I have come across, and to consider some of the points of method.

I finish by saying that the whole subject of how we shall introduce domestic science in secondary schools, what time shall be allowed for it, what bias we shall give it, at what period in the girl's life it shall come, seems to me to be bristling with debateable points.

Teaching of Domestic Hygiene in Elementary Schools, by Mrs. F. L. Mathieu, Lecturer, Northumberland Education Committee (associate).

THE old conception of learning book-knowledge as a matter apart from daily life has lingered too long in our schools. It is left to the twentieth century to emphasise the truth that knowledge should help in the betterment of human life, that it should teach not merely how to live, to merely exist, but how to live well and fully.

To do this we must have health. All agree as to the advantages and blessings of health. Without it life is a burden, with it many good things are possible of accomplishment.

It is often very much our own fault that we are ill. As Sir John Lubbock said, "We do those things which we ought not to do, and we leave undone those things which we ought to have done, and then we wonder why there is no health in us."

For years the utmost *ignorance* prevailed, regarding the most simple matters of health, with terrible results. Not to go back too far, the Report of the Inter-departmental Committee on Physical Deterioration gave as one of the chief causes, *parental ignorance*, especially regarding food. "White bread and tinned goods being often substituted for healthier foods, and excessive use of tea has had a deleterious effect," etc.

Then the National Conference on Infantile Mortality found that "maternal *ignorance* contributes very largely to the awful fact, that of all the children born, one seventh died before reaching the age of one year."

The convener of this conference, Alderman Broadbent, of Huddersfield, was, through this, constrained to be one of the first to urge the need of teaching domestic hygiene, including home management and infant rearing, in elementary schools.

Dr. Saleeby, writing on the eve of this important conference, said, "The massacre of the innocents in this country is caused, not so much by city life as such, nor by poverty as such, not carelessness, but pre-eminently and overwhelmingly by sheer well-meaning *ignorance*. This is an actively caused evil, due, not to the hand of God, nor to providence, but to *human ignorance in active motion*. Ignorance, the curse of God."

In the Report of the London County Council Joint Committee on Underfed Children, the same thing was again declared: "The first step in the direction of the improvement of home conditions should be, in such a modification of the existing school system, as to make it afford instruction in matters which the children of the wealthier classes learn, as a rule,

in the nursery, but which the children of the poor never learn at all. They have no knowledge of the importance of cleanliness or fresh air," etc. Surely this is evidence enough of the need of teaching domestic hygiene in the schools of the people. To quote Dr. Saleeby again: "If there is anything that national education *should teach* a girl it is to look after a baby. What on earth have they been teaching hitherto? some visitor from a sane planet might ask."

What is usually understood by the expression Domestic Hygiene? I interpret and teach it under four headings: (1) Personal Health and Temperance; (2) Domestic Health; (3) Principles of Home Nursing; (4) Infant Care and Management. The last two, of course, are taught to girls only. So much the better if these can be taken in conjunction with simple cooking and home management.

There are many, of course, who object to this teaching, especially that of infant care. They say, and rightly, that all this should be taught by the mother in the home. But State education compels the girl to be absent from the home at the very time when it might be taught, namely, from the age of five to thirteen or fourteen years, after which she usually goes to work of some kind, and home teaching of any sort is out of the question.

Then the mothers themselves are often ignorant, with the worst kind of ignorance: that which would perpetuate itself by misleading instead of informing.

Dr. Eder, a well-known essayist on social subjects, objects on the score of age. He says, "It is burdening the school-girl of fourteen with lessons unfitted for her age and, therefore, quite valueless." And again, "children of fourteen should not be taught how to wash an infant or the meaning of the baby's cry, or the evils of dummy comforters. We dislike the idea of young children being made into careworn nurses; moreover, such teaching is quite wasted until the girls can use it either actually or prospectively." One would gladly postpone this teaching till later if that were possible; but the only way, other than the elementary schools, in which this knowledge can be imparted, is in evening continuation classes, and as attendance at these classes is not compulsory in England, only a very limited number can be got together to be taught, and my experience is that the very people who would be most benefited, that is, girls from the poorest homes, do not, as a rule, attend.

The responsibility attached to the day school therefore increases. The Board of Education themselves accept this responsibility. They state, "the *school* is practically *the only available agency* for discharging the neglected

duty of the home, and is therefore *forced*, in the interests of the scholars. to assume the task of securing that they know the rules of health, and are encouraged to practise them."

Then again, the objection has been raised, that to talk to girls about these matters, especially the care of babies, is to damage or dispel the freshness of their innocence.

As a worker among the people, I know that the girls have to be the nurses (careworn, or otherwise, to quote Dr. Eder) of the babies in many homes. They daily see their mother feed, wash, and attend to the baby: it is no novel thing to them, then why should a teacher fear to speak of what are merely incidents of every-day life?

If taught in a simple, sensible, matter-of-fact way, the freshness and innocence of the girls will not suffer in the slightest degree; and, after all, the ultimate aim of a State system of education for girls is to equip them in the best possible way for the duties which will fall to them in after life.

An objection sometimes raised by teachers is the already crowded state of the school curriculum, which does not allow time for this important work. The school time tables, under present conditions, are generally dominated by the simple purpose of extending book-knowledge.

A subject of instruction, to be justified, ought to be either (1) necessary for the purpose of developing the child's mental, moral, or physical powers, or (2) it should be useful. The time given to instruction which is neither necessary nor useful to that child is time wasted. School life is all too short. Cut out, then, some of the fripperies which are neither useful nor ornamental.

One would think that the subject under discussion fulfilled both these conditions. It is useful, what more so? and it certainly has to do both with the physical and moral development of every child.

In 1910 Dr. Christopher Addison, M.P., introduced a bill into the House of Commons requiring that, in all public elementary schools, instruction should be given in hygiene, and to girls in the care and feeding of infants. Dr. Eder, commenting on this, wrote, "It is not the teaching of hygiene that is required; what is wanted is opportunity for its practice." But should not the rules of health be taught first, before they can be put into practice?

In 1910 the Board of Education began to recognise the need for further health teaching, for in July of that year they sent out to local education authorities Circular 758 Memorandum on the teaching of infant care and management in elementary schools.

In a prefatory note Sir Robert Morant says:—

> "What is commonly called 'book-learning' has in past years been too much regarded as the supreme purpose of our elementary schools, and it is beginning to be widely realised that the *teaching* given in these schools might with advantage be made more *practical* in certain directions, and that it might especially in the case of the elder girls be more definitely directed towards arousing interest in, and increasing the knowledge of the ordinary routine of domestic hygiene, including infant care."

This Circular 758, drawn up by Dr. Janet Campbell of the Medical Department of the Board of Education, is most helpful and suggestive, and should be carefully studied by those who wish to teach this most important branch of domestic hygiene.

The principles laid down are (1) that the teaching of infant care should not be attempted as an isolated and separate subject, but should form part of a general course in personal and domestic hygiene and home management.

(2) The entire subject should be considered as a whole, and should be built in a homely way upon a broad foundation of elementary facts well within the range of knowledge of the girl.

(3) In the next place, though it is eminently desirable that every girl without exception should pass through a course of hygiene and infant care, it is not desirable to give formal teaching in hygiene to children under seven years of age, or in infant care to girls under twelve years of age.

(4) All the teaching should be practical, the *ordinary classroom* unprovided with special apparatus is recommended as the *place* for the teaching in the following sensible words:—"Anything that can be done in a classroom unprovided with special apparatus can probably be done at home in a similar way, and that is the kind of practical teaching most likely to be of value."

From another educational point of view: it is well known to every teacher that all children do not respond equally to the process of book-learning, but may be readily interested in, and developed by "Doing" or "Hand Activity.'

Miss Hitching, an authority, relates the case of a girl, the very personification of dulness, who became a perfect enthusiast in the art of furniture polishing.

If the subjects under domestic hygiene are taught practically, as they ought to be, we are thus enlarging the educational value of them, and in so doing they may be a splendid aid in the development of character, since it will foster that self-reliance which comes from the successful production of tangible results: of the something accomplished, something done.

The Syllabus should contain such points as these :

1. *Personal Hygiene and Temperance.*—Cleanliness of skin, hair, nails, care of the teeth, change and cleanliness of clothing. Fresh air, breathing, prevention of phthisis, eating and drinking, foods and diets, digestion and indigestion, evils and dangers of alcohol, rest, sleep and recreation, good and bad health habits, conduct.

2. *Domestic Hygiene.*—The home, aspect and site, size with relation to family, ventilation, overcrowding, cleanliness of home, water supply, lighting and warming, thrift and saving, fixed duties and discipline.

3. *Principles of Home Nursing.*—The home nurse, the sick room, ventilation of and temperature ; care of the patient, washing and changing, care of the mouth and back ; feeding the patient, simple recipes and rules ; local applications, poultices, etc. ; giving of medicines ; taking temperature and pulse ; making of homely appliances for use of the sick ; simple ailments, home treatment, etc.

4. *Infant Management.*—The baby's food ; clothing, and how to make it; baby's bath and toilette; home-made articles; teething; baby's outing and pram ; cot and sleep ; habits and training ; illness : croup, diarrhœal prevention of rickets, etc.

The Teacher.—It is wise to entrust the teaching to the headmistress or one of the school staff rather than to an outside teacher, even the most highly-trained specialist. The teacher on the spot knows the girls and their homes, and can sometimes even influence the mothers. She can too, in many ways, link up the subject with the other work of the school. A good, sensible, sympathetic woman will also see that the girls do not merely regard the work as an interesting school lesson, but that the knowledge is to fit them for their own homes now and in years to come.

A good plan, when it can be carried out, is to give the teachers an opportunity of having lessons or lectures from a specialist. This was done by my Committee with good results.

Teaching.—It cannot be stated too emphatically that the teaching should be *Simple ;* technical or physiological terms carefully avoided, and everything explained in plain English.

Where to teach.—In those schools where home-making centres exist would be an ideal place, but at present, unfortunately, there are few of such, and the greater part of the work will have to be carried out in the ordinary class-room. This is now being done under several local education authorities that I know, with good results.

It would be better if part of the work, especially infant management, could be done in connection with a crêche, or a school for mothers, where

the actual handling, washing and dressing of the baby could be practically taught, and by a trained nurse or certified midwife.

When this is not possible a model "baby" doll must be provided, and the washing and dressing practised on that. Sometimes a friendly mother can be persuaded to bring her baby, and if the girls are allowed even to hold it, its fraility, helplessness, and beauty appeal to the girls as nothing else can, and they are all for their turn to help.

Apparatus.—With reference to practical work in general, no expensive apparatus is really necessary. A good plan is to encourage girls to bring from home or make most of the articles needed. This I find interests the mothers, and links up the work of the school with the home. Of course we preach a counsel of perfection: teach what is best, and then try to make or contrive something simple but pretty and clean at small cost.

The cost of everything should be taught, and the best materials studied, quantities talked over and reckoned. This will be a good exercise in arithmetic as well.

You will see from the little articles exhibited a few examples of what has been and can be done to make the work practical and interesting and the cost suited to poor homes.

For example: a clothes-horse draped makes a good draught-screen, a mackintosh substitute is damp-proof paper, costing sixpence per roll of twelve yards, enough to last all through an illness, or even a square of strong brown paper well oiled.

Bed-cradles.—Cradles may be made from a child's penny hoop cut in two, or a discarded bonnet-box.

For the protection of food from flies, dust, and germs, protectors can be fashioned out of a piece of cheap muslin and a penny coil of wire. A home-made meat safe, costing under sixpence, is shewn. It is made from three cap rings, one yard of muslin, and a meat hook. The same article costs 1s. 6d. if bought from a store or shop.

In teaching infant management, baby's garments may be home knitted of cheap wool, or even of bits of wool, at a trifling cost, thus obviating the use of the deadly flannelette.

Baby's dusting powder, puff, and bag to hold same may all be made at a cost of about 2d., and yet be hygienic and pretty.

The cot, though pretty and handy, may be only a banana crate, costing 2d.; and the basket, that dainty convenience so loved by mothers and nurses, may be only an egg basket costing 6d. When used, draperies should be all made to take off for washing.

I deprecate the use of *gory diagrams*, which often frighten and disgust

the girls, and use only the simplest pictures and posters, which can often be picked up in schools for mothers, in health exhibitions, or may even be home-made.

A good way in which to interest both scholars and parents, is to organise a little exhibition of the things used and made in teaching by the girls, or to hold "an open day," when parents are invited to see the work going on.

I visited a large girls' council school in a slum neighbourhood recently, on such a day, and found in one room girls changing the sheets of a sick bed, on which another girl was for the time being the patient. In another room, the baby doll was being carefully dressed by the members of the class, while in a third the girls were neatly laying the cloth for dinner. This was all done in the ordinary class room with the class teacher. I spoke to several of the mothers, of whom there were many present, and they were all very interested, and expressed the wish that such things had been taught when they went to school. The girls should be encouraged to keep a neat strong note book all through, in which to set down rules, summaries, patterns, and recipes, for use and reference in the future.

Expense.—The expense of providing such instruction is not great if taught by the class teacher. The largest items are the cost of the model baby doll, 10s. 6d., and the provision of a complete set of properly made flannel or woollen baby clothes, also costing about 10s. 6d.

To save expense the girls should be encouraged to bring and lend things from home, and, as already stated, only simple and cheap materials should be used.

The boys of the wood-work class will be proud to strengthen and neaten the banana crate intended for the baby's cot, and can improvise a homely and handy medicine cabinet from a clean soap box, or make a cheap bed-rest from dimensions given by the girls.

Time.—To be successful, domestic hygiene should be taken as an integral part of the school work, and not as a special subject. While a great deal can be taught incidentally, there should be stated lessons of forty to forty-five minutes, at least twice per week.

Personally, I find it a great help to attend regularly a "School for Mothers," thus keeping in touch with poor mothers and their children, and learning of their difficulties and troubles. I am thus in a better position for knowing what is necessary to be taught to the school girls.

As Mr. B. S. Rowntree reminded us, in speaking in York only a short time ago, this teaching also has its *social side*, and teachers of domestic

science can do a great deal in helping to ameliorate bad social conditions by the influence they exert in such teaching.

In conclusion, just as the value of book education, as a means of mental training, must depend chiefly upon the efficiency and thoroughness of the teaching, so also the training in health matters must rely upon earnestness, upon the careful explanation of difficulties, and upon the establishment in the scholars of good health habits.

Their surroundings should be such in school as to point the moral, rooms thoroughly well ventilated, scrupulously clean, and as bright and cheerful as circumstances permit.

I repeat, it is the coming generation rather than the passing one which should be instructed in proper methods of life, if the suppression of preventable diseases is to be secured.

The pupils in the schools of the country will be the men and women of the next generation, and if they can be taught the principles of hygiene in a simple, practical but convincing manner, they will go out into the world ready for the emergencies of life, and with an understanding of how best to avoid phthisis and other preventable diseases; and until the schools make provision for this kind of teaching it is impossible to cope successfully with such diseases.

The Sociological Influence of Teachers of Domestic Subjects, by Mrs. M. A. Cloudesley Brereton, M.I.H., Officier d'Académie (member).

THE attitude of the home towards the school, and the school towards the home seems, at the present moment, to be undergoing a complete change, a change for the better. The two are not only drawing closer in all the civilised countries of the world, but they are, in those cases which may be said to be among the most progressive, interlocking and working as two parts of one machine united for the purpose of moulding the child for its life work.

Speaking for the moment of England and of the elementary school, there was a time when educators looked upon the homes of the children as a kind of Nazareth, out of which no good thing could come. And in the early days of compulsory education the parents for their part were often apt to look upon the teachers as their natural enemies and their legitimate prey. The teacher in the poorer districts, therefore, naturally looked upon the mother as her opponent in the struggle to train the child, and the child was footballed between the two. The teacher often forgot that the child was only in school about six hours out of the twenty-four; that the home with all its faults was a very real factor in the life of the child; and that no effort was wasted which aimed at influencing the home and the parents. Where there was not mutual understanding between home and school, the mothers (and sometimes the fathers) were often very handy with their tongues, and sometimes with their fists, if the teachers used anything but the very mildest of force to inculcate lessons of obedience and self control, of order and of consideration for others.

But during the first five-and-twenty years of compulsory education a different state of affairs gradually grew up, largely, no doubt, due to the fact that a new generation of working mothers had grown up: mothers who could look back on their own school days as the happiest in their life, and their teachers as their best friends; and at the same time teachers have grown to understand more of the home conditions of the children under their charge.

A poor fallen girl was once heard to say: "I was always a wrong 'un; even when I was a kid at school. Nobody in the world ever loved or understood me except teacher, and she's dead." If only that teacher's influence could have been handed on, who can tell whether that ruined life might not have been saved.

In this matter of contact between home and school, the personality of the teacher is of course of immense importance. Temperaments differ so much, and some highly intellectual women would find nothing so difficult as this particular work of dealing with the parents. With the very scholarly woman books are more real than children. Children merely exist as receptacles for scholarship. But the majority of teachers in all grades of school have in the past done much, of their own initiative and free-will, to influence the children, and through the children to influence the homes.

But where there is the most effective contact between home and school it is found in connection with some practical subject, some subject where the teacher can put aside the pedagogue and talk as foster-mother to mother about the interests of the child.

An exhibition of school drawing, needlework, brushwork, kindergarten specimens, carpentry, dressmaking, millinery, or other handwork will draw the parents (from those of infants to those of girls and boys at trade schools) to the institution where their children are taught. The parents can understand and appreciate such handwork as a tangible result of school instruction, even when they themselves have forgotten much of less practical subjects which they learned at school, and would hesitate to come to a display of something more academic for fear of feeling out of their element and displaying a fund of ignorance.

But it is not only at these periodical displays of handwork that such courses bring home and school into contact. Those of us who have children can remember the pleasure it gave us, as well as our children, when our boy brought home his first book-rack made at his carpentry class, or our girl her first cake made entirely by herself.

But here comes into consideration a very important point, the appreciation of which must underlie all successful teaching of domestic subjects. The teacher must identify herself both with the locality in which her work lies, and the class of home from which her children come.

From the latest reports on vocational education in America, we learn that the co-ordination of home and school in domestic science has been so perfected in the High Schools, that school marks are given for definite housework done at home, the reports being made at regular intervals on proper forms by the mothers of the girls, and forwarded to the teachers.*

* The committee purposely avoids discussion as to the most appropriate name for such a course, adopting the one given solely because it seems to be at this time commonly in use.

For several years a committee of the domestic science section of the Illinois High School Conference has been at work upon a syllabus of this subject, altering its details

The test of a practical subject is that it should be practised, or at least practicable. The best and most lasting results to be hoped for from a scientifically conceived course of training in domestic subjects must be expected in the home, and not in the school; after rather than during school life. The best and surest test will be: "Are the homes in a district influenced for good after, say, ten years' cumulative effect of domestic subjects work?" This is, perhaps, putting a very difficult test; one not easily measured by examinations; one requiring more sympathy and understanding from education authorities than something less ambitious sociologically. But it is not in reality such an idealistic impossibility in these days of inspection rather than examination. For example, in a paper contributed by Miss Dix on this subject at a teachers' meeting recently, she described one model scheme which has worked well in elementary schools in a midland city. Apart from the lesson aspect of domestic subjects, Miss Dix said:

> "The girls in all classes wear their hair well tied back to show clean ears and necks; refrain from eating lunch, fruit, sweets on school premises; work with classroom window open; drill in open air; repair the torn garment if sent ragged to school (insufficiently-clad children receive washed garments begged from and repaired by better-off scholars); wash at school if unwashed or ill-washed on arrival (a rare occurrence)."

Such practical domestic hygiene applied every day is bound to have its own reward in forming habits which will not be lightly dropped, and any inspector can see at a glance that the teacher is on the right lines, and judge the school by its fruit. So far as the homes are concerned, the visible and immediate results throughout school days will repay hard-working mothers, and encourage them to make those great sacrifices,

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from time to time as experience accumulated. This syllabus in its latest form is adopted because it represents not only the best that is accessible at this time for Illinois conditions, but also because it is an excellent analysis of the subject and already somewhat familiar to the teachers of the State The syllabus as adopted by the conference is carried out into minute detail and arranged especially for teachers. . . . . .

The full text of this syllabus in detail is being published by the Department of Household Science of the University of Illinois, from which a printed copy may be had on application.

The work as here outlined will take a full fourth of the student's time. Those who desire to spend less than this proportion of their time in domestic science should arrange the matter by election, choosing those terms and years that best meet their needs, but the course as a whole is designed to give a good working knowledge of household affairs.

Schools unable or unwilling to carry the work for four full years can, of course, make such selections or condensations as they find most suitable to their condition, but it is important not to undertake more in a given time than can be thoroughly done—as well done as in any other part of the school work.

One purpose of this work is to identify school girls more closely with the affairs of the home. Accordingly, it is recommended that here, as in other vocational courses, credit be given for work done regularly and systematically at home, provided it be of sufficient definiteness to permit a full and satisfactory report. Here, as elsewhere, no credit should be given for mere desultory helpfulness.—(Report of the Illinois Educational Commission, 1911.)

which they undoubtedly have to make, if they keep their children at school an extra year in order that they may receive that additional training which will make all the difference in after years; while the stern necessity of public opinion, and the existence of a sanitary conscience in such a school, will, for very shame, make slovenly parents at least give their children a chance to form good habits, which will stand the children in good stead in after life, even if they are removed from school at the earliest possible moment.

We come back then to our original statement that the teacher of domestic subjects must identify herself with her locality, and the conditions of her children's home life. But because she may at any time be called upon to change her locality, or to organise for a district or group of schools, her training must not be too narrow or circumscribed. The question naturally arises: "What type of woman is suitable for the work, and what sort of training is desirable?"

She should be a woman who can work out in her own mind a synthesis of what an ideal system of domestic subjects work should be, in her own country at least, for slum children, with due regard to home conditions; for children from working men's homes, where the workers are struggling with family life on a pound a week; for children of more highly paid artisans; for children in schools in all the grades above; picturing them all with relation to the homes from which they come, and then having satisfied herself that such schemes stand to her for her ideal, she must be content to start on true *terra firma*, the school given into her charge.

She must not attempt at first a scheme which she has formulated as her ideal in a school poor in any sense, either because the children come from homes poor in the material sense, or poor because the previous domestic teaching upon which she has to build is almost *nil*. She may expect to reach that in, say, ten years; or, if she is herself a genius or is especially favoured with responsive soil in the shape of enthusiastic children, she may approach the ideal course in half that time. Many an enthusiastic young teacher has missed her mark and failed, until she has gained wisdom by bitter experience, because she has tried to teach aeroplaning instead of crawling.

It is well to remember that "to understand common things is the highest achievement of the educated mind." And while domestic economics is a highly complex and scientific subject, it is a synthesis of things common and commonplace, and is a striking example of the truth, that there is nothing so difficult as to deal simply with a complex or highly scientific subject.

But happily we have passed beyond the stage when even intelligent folk thought that the teacher of inferior talents would do for an infant school; that the comparative failures of the profession were good enough for the rural schools; that anyone with a little miscellaneous general knowledge could teach domestic subjects; and that any fool could run a home and bring up a family.

On the contrary, we know that the best teacher is not too good to teach babies; that the rural school has its own problems, in no respect second to the town school, and in many ways the key to national health and economic stability; that it needs a culture all its own to turn out a trained domestic subjects teacher; and that training for wifehood and motherhood (not neglecting the consideration of wholesome fatherhood) is the foundation of first importance to national well-being, because it embraces the whole science of life.

The teachers suitable for this work can, therefore, only be drawn from those groups where wide and thorough general education has fitted them to understand the larger problems of their day and generation, and not merely the craft of cooking, sewing, cleaning: such qualification as might be adequate for running with success a working girls' training school preparatory to placing girls in service, though they will need that homely, fundamental knowledge as well, but need to know it in a different way, and deal with it in a different perspective as regards society.

The erroneous idea that the domestic subjects teacher is but a kind of glorified general servant must be got rid of once for all. We hear sometimes that she is not happy in her school, that she is not well received by the rest of the staff in the common room, and so on. In many cases in the past this may be due to the fact that as practical domestic economy, in common with other vocational subjects, has been looked down upon, the wrong, the half-educated type of woman has been forthcoming to fill some posts.

But frequently it is due to the mistaken idea on the part of the purely literary, or purely scientific members of the staff, that it is more cultured to be able to give the context of every obscure quotation from Chaucer to Shakespeare, than to know the economic history of yesterday, and to help to mould the economic history of to-morrow; more cultured to be able to work experiments in a test-tube in a laboratory, than to test food values over a kitchen range. This is a kind of vulgar professional snobbery of which we have to divest ourselves, of which the most liberally educated are divesting themselves.

We have, in this generation of applied science, to understand that

there is a culture peculiar to every profession. The doctor, for instance, who has never read anything about the history of medicine, the work of other men in other lands, in other days, and in other branches of the profession than his own, is not a truly cultured man, although he may be able to prescribe with accuracy for his own particular branch of medical work, and may have the highest academic degrees.

So the domestic science teacher, if she is to have the effect which she may have in moulding the career of women in the troublous times before us, times when women will have much more influence in matters of public health than ever before, must keep abreast of reforms in household sanitation, garden city and town-planning progress, the care of the feeble-minded, knowledge of crêche management and day nurseries, conditions in the homes of wage-earning mothers, questions of medical inspection of schools, reports of public analysts, and matters regarding food manufacture, advance in teaching her own subjects in other countries, conditions of life in other standards of living than those of her own or her scholars, both higher and lower standards, progress in household inventions from the practical commercial standpoint, diseases incident to various trades in which her girls may be required to apprentice themselves, and many other branches of study.

Of course this may seem to presuppose more leisure than any teacher is likely to get. But provided the woman has come from a good home, and has had the advantage of a broad-minded education, a great deal can be done during her professional years by reading regularly the official organs of the teachers, which keep their subscribers informed of what is going on in Parliament and in the general press, as is done by *Education*, the official organ of the Domestic Subjects Mistresses. And teachers of domestic subjects can help themselves by becoming members or associates of The Royal Sanitary Institute or other similar societies, and making good use of the official lectures, publications, and libraries.

Moreover, no teacher will expect to know all about every branch of modern social science. According to her individual bent she will make a thorough study of one or more, and get a general view of the rest. But get a working knowledge of them she must, for domestic subjects work must be a living, growing, organic whole, and in intimate touch with human life. In no branch of teaching is this more true, for conditions of social life, and therefore of domestic life, are changing with such rapidity, with such unexampled rapidity, that no stereotyped system of teaching domestic economy could long continue useful.

The Association of Domestic Subjects Teachers is, I believe, contem-

plating forming a standing committee, to be composed of educationists (including teachers), distinguished chemists, employers of labour, sociologists, and others interested in the question, to formulate a policy and to keep things growing and moving from time to time, to be, in fact, composed of men and women of such standing, that it will command the respect of the Board of Education, and win for the pioneers in this important work wide latitude in trying experiments in different localities and different grades, so that the work shall not become stereotyped and lifeless, but remain progressive and practical.

It is this suitability to the needs of home life, which has made domestic teaching so effective in Germany, Austria-Hungary, and America, and if this contact with actual social facts is steadfastly adhered to, the teachers of domestic subjects will, like the school doctors, find themselves a very great power for good in the next generation. Instead of being regarded as the educational maids of all work, they will be recognised as the essential factors in moulding sound, healthy bodies, in which alone sound minds and well-balanced characters can develop.

The Protection and Storage of Food in the Home, by Miss F. I. Lansdown, Chief Woman Inspector, Leeds.

THE great difficulty that presents itself in the storage and protection of food in the home is the fact that, in almost every class of house, the provision made for storage is inadequate and generally unsuitable.

Everyone probably will agree that the minimum account of storage accommodation required in any dwelling however small, consists of *First*, a dry, clean cupboard for keeping groceries in, and *Secondly*, some well ventilated fly-proof closet in which to keep meat, milk and butter, or its equivalent.

I propose to compare with this minimum amount, the amount actually provided in the following classes of existing houses, occupied chiefly by working class people.

(*a*) *Workmen's Homes* (Back to back).—There are about sixty thousand of these in Leeds, the rents ranging from 2s. 6d. to 4s. 6d. per week. Nearly all are provided with a cupboard in the living room, generally close to the fireplace, and the majority of them have also a cellar, with a shelf at the cellar head. These are nominally keeping cellars, but unfortunately they are too often dirty, damp, dark, ill ventilated, and have the coal cellar opening directly into them. Frequently they are only used as a receptacle for rubbish by the tenants, and sometimes by the neighbours, and will only be cleaned up on compulsion. They are often a happy hunting ground for cats, or perhaps pigeons; ducks or hens are kept there. The woman of the house will express surprise that anyone should wish to see the cellar, and will say, "You can go down if you like. I've never been down myself." The stairs are very often steep and unlighted, and consequently dangerous.

(*b*) *Workmen's Houses (Through).*—In these there is the same provision as in the back-to-back houses, but in many cases the cellars are lighter, better ventilated, owing to the possibility of a through draught, and therefore drier. There is sometimes a stone table, but the coal cellar more frequently than not opens directly into the keeping cellar. Occasionally the sanitary convenience is in the cellar.

(*c*) *Workmen's Flats* in Leeds are all "through." There are only about eighty-three, and the only provision made for storing is the cupboard at the side of the fireplace. In one set of flats the lower half of this cupboard is ventilated by an airgrate, and therefore presumably intended for storing food, but commonly used as a coal cellar. In any

case a cupboard on the floor, and easy of access by children, cats, and dogs, apart from any other disadvantage, is hardly the place for keeping food. In another set of flats there is a second small cupboard on the other side of the fireplace, and about six feet from the floor. There is an airgrate in these, but they are said to be so infested by "black clocks" as to be unuseable. I believe that these cupboards are common to all this class of dwelling.

(*d*) *Adapted Houses.*—By this I mean those bettermost houses which have come to be used as tenements on account of the neighbourhood having deteriorated. In these, except for an occasional cupboard, there is no provision for the storage or protection of food. There is sometimes a larder in the house, but it is generally reserved for the landlady.

(*e*) *Workmen's Cottages* in the country are better provided. There is generally a larder, fitted with a stone shelf, and several wooden ones, ventilated to the outer air and having a through draught.

(*f*) The six to eight-roomed house is perhaps the worst off of all, but the accommodation varies very much. Frequently there is either no larder at all, or a small, badly-ventilated cubby hole under the front door, close to the coal cellar, and sometimes next to the sanitary convenience. Provision for the storage of groceries is generally absent. In flats, which form the alternative to the six or eight-roomed house, there is generally not even an attempt to provide storing accommodation. Any closet of a size to be useful would probably be listed as an extra bedroom.

It will be seen that in workmen's flats the only provision for the storage of food is the cupboard by the fire, and that in the majority of the houses there is a cellar in addition; but that neither of these places can, under existing conditions, be considered as suitable for storing such foods as milk, butter or meat. It seems as if the storage and protection of food is a matter to which little or no consideration is given in the planning of dwellings for working people, in spite of the fact that theirs should perhaps be the most carefully arranged of all houses. They have the most to do for themselves, and the least to do it on.

It will be probably said that nowadays working people in towns do not want to store food, that they buy it ready cooked at the nearest shop. Many of them do, but they certainly have no encouragement to housekeep in the most economical way, while there is no place in their house in which food can be kept fresh for at least a day.

Keeping of Milk.—In the cottages in the country, one of the great points about the storage accommodation seems to me that some definite arrangement is made to keep the milk cool, and free from contamination.

In towns the local authorities and milk dealers take all kinds of precautions in order to secure that the milk arrives at the house fairly pure; but its chances of keeping pure once inside the house are, under existing conditions, very slight. The milk is too often received in a jug or basin which is dirty, or soured from the day before. Then if it is not left on the table or window-sill it is put, generally uncovered, in one of the following places: (*a*) in the cellar, or (*b*) on the cellar head, a stone shelf at the top of the cellar steps (both these places are open to the dust and dirt from the cellar and coal-cellar, house and street); (*c*) under the sink, the inappropriateness of which needs no comment; (*d*) in the cupboard by the fire.

One would imagine that the wall which is warmed by the living-room fire would not be suitable for forming the foundation of what is often the one available space in which to keep food, but this arrangement is not unheard of even in buildings where one would expect to find the best that money and brains could produce. The following is from a recent paper:—

> "A Liberal Member in the House of Commons directed attention to the new larders. One wall, he said, was also the wall of the old boiler room, so that one wall of the larders was warm and the other cold. Moreover a pipe from the boilers, by means of which the house was heated, passed through the larders. Even the Office of Works, he said, could not warm members' feet and cool their meat by one and the same operation."

In houses which have been visited by sanitary inspectors and health visitors, including visitors from babies' welcomes, there is an increasing improvement in the way milk is looked after. It has been explained to the housewife that the milk jug should be scalded out before the fresh milk is taken; that the jug of milk should be stood in a basin of cold water and covered with a plate, or, better still, with a piece of muslin or clean cloth, one end of which is wrapt round the jug and dipping in the water; if possible the jug should be set in a draught. Butter may be kept fresh and cool in the same way. We hear a great deal about infantile mortality. There would certainly be less if babies were not fed on contaminated milk.

In the interests of the health of the family, it is evident that some kind of small larder must be provided either on the basement or ground floor of every dwelling. It must be ventilated into the outer air with a through draught if possible, should be cool, dry, and of an even temperature, and preferably of northern aspect. The floor should be of stone or concrete, and the walls of some substance easily cleansed. If limewashed, it should be renewed several times a year. There should be a stone table or slab, and either wire gauze covers or a wire gauze safe for keeping meat in.

Some wooden shelves should also be provided. The windows should be fitted with wire gauze in place of glass, and, if necessary, covered with muslin to keep out dust and flies. The larder should be efficiently separated from the coal place. If cellars are to be used for "keeping," they should comply with the above conditions, and, in addition, should be easy of access, with well-lighted stairs. The shelves and floor of the larder should be scrubbed once a week. The food kept there must be looked to every day, and any that is not good removed at once.

Surroundings of House.—It is necessary that the ventilating window or air grate to the keeping place should not open in close proximity to any gully, sanitary convenience, ashpit, or manure heap, and that the air surrounding the house should be kept as pure as possible by proper care being taken to flush water-closets and gullies, and by the frequent removal of refuse and manure from the neighbourhood. This work of cleansing is undertaken by the local sanitary authorities, but the housewife could aid them very much more than she does by reducing the amount of refuse to be removed. It has been conclusively shown recently, that flies act as carriers of dirt and disease, and especially that summer diarrhœa, which is the cause of so much infantile mortality, is probably spread by their agency. Refuse heaps, and any accumulation of decomposable organic matter are amongst the principal breeding places for flies, and as the only way to stop the contamination of food by flies is to exterminate them, it is evident that one of the chief means of achieving this end is by leaving no breeding places for them. If in every house all organic refuse were burnt every day, a very great deal would be accomplished in this direction. There are other houses, but they are few in number, built without a basement, and with a suitable larder opening from the kitchen, but I believe that the arrangement for storage and protection of food that I have described is typical of that provided for those classes of houses in most large towns, and that the general health of the town would be greatly improved if suitable storage were provided.

The Food Problem in the Home Treatment of Consumption, by Marion Fitzgerald, Sanitary Inspector, Woolwich (associate).

THE National Insurance Act, 1911, makes special provision for the treatment of consumption. The Departmental Committee on Tuberculosis, in its Interim Report just issued, tells us that sanatorium treatment, which will be available for insured persons and their dependants under the Act, has a wide significance. "The advantages of this form of treatment can in many instances be given to patients who are living in their own homes or shelters . . . . it may be desirable to secure that the patient should be provided with additional food, or a separate room, or bed, in order to ensure efficient treatment."

It is the need for the provision of additional food in many cases to which I want to draw attention. Rest, fresh air, and an abundance of nourishing food suited to the patients' digestive capacities are the three main lines of sanatorium treatment. Ingenuity will often secure the first two for the consumptive in his own home without financial strain. The open window will give him a certain amount of fresh air at night, and it is within the province of sanitary authorities to provide him with additional bedding, so that he may occupy a separate room, or at least a separate bed. Sanitary authorities may, and in some cases do, supply shelters for the use of consumptives in their own gardens. The consumptive able to keep on with his work may, by judicious arrangement of his evenings and week-ends, secure a very fair amount of rest. But when we come to the question of food the needs are harder to meet amongst working-class patients, and an adequate diet for one consumptive member will strain that family's resources considerably. If the family is below the poverty line the diet of a consumptive patient will be hopelessly inadequate, for it cannot be accomplished on much less than 1s. a head per day. In the standard work on the subject, *Diets in Tuberculosis*, Drs. Bardswell and Chapman give the results of experiments made at various sanatoria, designed to secure an efficient diet at a minimum cost. They maintain that the physiological diet (*i.e.*, the one sufficient to maintain that particular individual in health) must be increased 30 per cent. as regards the amount of proteid in the case of consumption. The cost worked out in the investigations at about 11d. per head per day.

It is fairly certain that the poorest labouring classes never get a physiological diet at all; much less do they stand any chance of getting this increased thirty per cent. as regards the amount of proteid if they are

being treated for consumption. In visiting cases of phthisis amongst those below the poverty line, one is often appalled at the wretched diet on which they are subsisting, and often carrying on their work more or less intermittently. Many who would have been well above the poverty line fall into it when consumption has attacked the bread-winner. *In this class it is impossible to meet a consumptive's nutritional needs from the family's resources.* It is greatly to be hoped that the rather tentative suggestion of the Departmental Committee that "in some cases the patient should be provided with additional food" may be acted upon. No measures for the treatment of patients below the poverty line can be adequate unless accompanied by additional nourishment. The treatment that they receive will otherwise be rendered abortive, and the benefits of insurance, towards the cost of which they *must* contribute when in employment, will be but small.

How this additional nourishment should be given, with proper safeguards for its use and preparation, may be a matter of some little difficulty, but it is not insuperable. The Departmental Committee evidently contemplates an enlargement of the tuberculosis dispensary system. Under this system patients are supervised at home, and visited at intervals by both doctor and nurse. It should not be impossible, under these circumstances, to give tuberculosis dispensary patients additional nourishment as part of the treatment in needy cases.

SECTION D.—HYGIENE OF INFANCY AND CHILDHOOD.

The Medical Inspection of Children under School Age, by Lewis Williams, M.D., D.P.H., Medical Superintendent, City of Bradford Education Committee.

AMONGST the statutory duties of school medical officers is one making obligatory the examination of all children upon their admission to school. This includes children of ages from three to seven years, and a considerable proportion of these entrants are under school age (five years). In some areas children are not admitted to school until they have attained the age of five years; in other areas they are admitted to the babies' class at the age of three or four. Attendance of these babies at school is optional, and consequently somewhat erratic and irregular; they are therefore difficult to keep under observation by school-doctors. Some of them attend for a short time only, are then withdrawn, and not again presented for admission until of school age; others after a more or less irregular attendance at school, are withdrawn, and after a period of non-attendance are admitted to another school, the health schedule in each case being returned to the school medical officer marked "Left School." A considerable amount of trouble and inconvenience is subsequently occasioned in the attempt to trace these children. It is, indeed, often impossible to follow them up, and they are ultimately re-examined as entrants.

For this reason the desirability of examining under-age scholars has been doubted by medical officers, some of whom have suggested that no child should be examined until it has attained the statutory age of five years. There are, however, other considerations which should receive notice before such a conclusion is adopted. For instance, the physical condition of these children, the presence or otherwise of definite disease, and the desirability or necessity for medical or surgical interference.

I have made an exhaustive inquiry into the results of the medical examinations of the under-five-year-old children attending the Bradford schools during the last four years, and the facts disclosed cannot but compel me to the opinion that these examinations are not only desirable, but necessary. The physical condition of these babies and the diseases from which they suffer call urgently for treatment, and this treatment is nearly always forthcoming only after medical examination with its attendant disclosures.

Of children aged three, over 50 per cent. were found to have already had measles, and of those aged four, nearly 60 per cent. About 40 per cent. in the same age groups had suffered from whooping cough. It is a well-known fact that the majority of young children do not recover from measles and whooping cough as rapidly as is generally supposed; the complications of these diseases are very numerous, and though children apparently shake the disease off in the course of a few weeks, there are many who, though they appear to have recovered, are suffering from one or the other of these complications, and are thereby laying the foundation of further and more serious trouble later in life. The oversight may often be attributed to the fact that in diseases such as measles and whooping cough, simple diseases of childhood so called, it is considered unnecessary to call for medical advice.

The conditions which affect children subsequent to an attack of the diseases named, include pneumonia (congestion of the lungs) bronchitis, catarrh, enlarged glands, otorrhœa, inflammatory eye-diseases, squint and affections of the heart.

There is, moreover, a more or less lowering effect upon the constitution, which may predispose the child to other forms of disease, and more particularly perhaps to tuberculosis: any of the pulmonary complications for instance may prepare the child for phthisis; bronchitis if neglected may become chronic, otorrhœa may lead to partial or complete deafness, and eye inflammation may terminate in defective vision of varying degrees.

On numerous occasions one or more of these conditions have been discovered in children under five, and from the history obtained the onset in many cases has been traceable to an attack of measles or whooping cough. Needless to say, the detection of such diseases is important, and the earlier they are discovered the better it will be for the children concerned. Amongst other facts brought to light are the following.

The condition of nutrition is described as "below normal" in nearly as many children under as over five.

About as many under as over five are described as of delicate appearance or anæmic. Squint was present in 1·5 per cent. as compared with 2 per cent in over-fives.

Adenoids were found in 11 per cent, as compared with 14 per cent. in over-fives. Other diseases of the nose, throat, and mouth in 2 per cent. of each group.

More than 4 teeth were found decayed in 32 per cent. of under-fives.

Phthisis was diagnosable in ·2 per cent. (over-fives ·5 per cent.)

An equal number of both groups were found to have tubercular glands in the neck. Other tubercular diseases were found more commonly in the under-fives. Eye diseases, bronchitis, rickets, enlarged lymphatic glands, and deformities of bones and joints were equally numerous in both groups.

Skin and scalp diseases were present in 2·5 per cent. of under-fives (over-fives, 4·6 per cent.).

That all the diseases named urgently require treatment will not be questioned; it would undoubtedly be far preferable if they were prevented, but this will be accomplished only when the importance of obtaining medical advice for the diseases of childhood is realised by parents.

In the meantime many young children are afflicted with disease which in some cases is not apparent and in others is so indefinite that it is not viewed with the slightest concern. The necessity for medical treatment of squint and sore eyes as a preventive of defective vision in later life is not sufficiently recognised, attention to otorrhœa is usually neglected, and an anæmic or delicate child is too often allowed to "grow out of it."

The common occurrence of serious disease in under-age children is therefore sufficient justification for the medical examination of this group at the earliest moment, and the question arises, "Is the time when a child is admitted to school, even if that time be at the age of three, sufficiently early for this examination?"

In a great number of cases it has been discovered that disease has already seriously affected the health of a child even at this early age, as is instanced in the large percentage of cases of squint and eye-disease, adenoids, phthisis, and other tubercular diseases, bronchitis, rickets, and skin diseases. It would therefore appear that the examination, so far as these children are concerned, has not been carried out sufficiently early.

In most of our large cities, at any rate, the care and medical supervision of children commences with the child's advent to our sphere, and very careful observation is kept of it during its first year of life. Babies welcomes and infant care and rearing centres have been established in order that the dreadful mortality amongst infants shall be reduced. The results of such institutions have been excellent; when a child becomes 12 months old, however, this desirable supervision ceases until it attains school going age, when it is taken in hand by the school doctor, who unfortunately finds that in the interim of neglect the child has become afflicted with preventable disease.

The time has surely arrived when we should consider seriously the necessity of linking up these two departments of the public health service, and so consummate the national desire that the young children shall grow up healthy and free from disease. It is essential to the nation's welfare that the production of imperfect, diseased, and crippled children shall cease, as it is that the infant mortality shall be reduced.

In districts where the infant care scheme and the school medical service are administered by the same medical staff, it should not be difficult to link up these two branches; the gulf betwixt the infant clinic and the school clinic is not wide, and it is both desirable and possible that this gulf should be bridged over at once.

The infant clinic should be made available to children under school age, in order that they may be kept under regular supervision. To this clinic, mothers who are unable to afford a doctor's fee should be allowed to bring their children for examination and advice.

Upon attaining school age, the children would be transferred for supervision to the school clinic.

Those of us who have experience of the school clinic realise its enormous value as a health centre as a means of prevention of disease and as an educative agency for the community, but we also realise that much of the misery and incapacity with which we come in contact is preventable.

The Sheffield School Tuberculosis Dispensary, by John E. Chapman, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer of Health (Tuberculosis), and Professor Ralph P. Williams, M.D. Lond., D.P.H.Oxon., Chief School Medical Officer, Sheffield.

Tuberculosis a Disease of Childhood.

PUBLIC attention has recently been focussed on questions relating to the prevention and treatment of tuberculosis, and recent medical work all tends to show that this disease, particularly in its pulmonary stage, which is the most infectious, occurs more commonly in children than was formerly suspected. The explanation of this probably lies in the fact that children, excluding those in the first two or three years of life, show a marked tendency to recovery, whilst adults are more liable to serious illness and permanent damage.

Organisation to Deal with the Problem.

The work of the Public Health and School Medical Departments of the City of Sheffield have shown the urgent need for dealing with the disease in childhood, whilst the establishment of a municipal tuberculosis dispensary has provided the means. In order to obtain the maximum of efficiency and the minimum of overlapping, in dealing with one set of patients who belong equally to the school clinic and the tuberculosis dispensary, both departments have coalesced; for this reason the tuberculosis medical officer has been appointed by the Education Committee as a special school medical officer to deal with tuberculosis in children, and the dispensary has been established in the same block of buildings as the school clinic. The first step was to establish a clinic for tuberculous children, in order to ascertain what the requirements really were. We began by examining on one morning each week notified consumptives (who were excluded from school), and the child contacts of recently notified cases in the early evening of another day.

Source of Cases for the School Tuberculosis Dispensary.

1. All cases found during routine medical inspection.

2. Special cases brought to the notice of the medical inspector at school.

3. Notified children attending an elementary school, the names of such children being obtained from the medical officer of health.

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4. Suspected cases sent by medical practitioners, nurses, patients of the tuberculosis dispensary and others.

5. Children living in the same house as a notified consumptive.

All children who attend an elementary school and live in the same house as a notified consumptive are sent for examination to the dispensary as soon as possible after the notification has been received by the medical officer of health. These children are written for by the clerk of the school clinic, who receives a weekly list of contacts of school age from the medical officer of health; he, in turn, obtains the information from the record of the tuberculosis inspector who has visited the home on receipt of notification.

6. Cases found during the examination of bursars, pupil teachers, teachers and caretakers who may be referred by the local authority for an opinion, and to secure the necessary preventive measures being taken.

Defects of Out-Patient Treatment.

It was clear from the start that the great majority of notified cases belonged to families who could not afford to pay for prolonged treatment. This is well shown by the following figures prepared from the reports of the tuberculosis inspectors:—

During 1911, 88 children between the ages of 5 and 15 were notified to the medical officer of health, in accordance with the provisions of a local Act making notification of pulmonary tuberculosis compulsory. 38 lived in back-to-back and 50 in through houses; 7 lived in two-roomed houses, 23 in three-roomed, 25 in four-roomed, 17 in five-roomed, 12 in six-roomed, and 4 in better-class houses.

The following figures relate to the children at present attending the Sheffield Open-Air School, who are notified consumptives and are a fair sample of the type of child we deal with: Average number in family, $5\frac{4}{5}$; average rent, 4s. $7\frac{1}{2}$d.; average income of the family, £1 3s. 6d.

It was found that many of these children had been under treatment at the voluntary hospitals, their attendance, however, being extremely irregular, whilst home supervision was not being carried out at all, since the visits of the tuberculosis inspector were being up to this time directed towards prevention only. We therefore arranged that the homes of the children should be visited by the municipal health visitors, who are trained nurses, sanitary inspectors, and certificated midwives; they were instructed to see that the directions given at the dispensary, as to prevention of the spread of the disease in the family and its treatment in the individuals, were carried out. We recognize the desirability of the home being

visited by a dispensary doctor in order that the necessary arrangements may be discussed on the spot, but at present the staff is too small to allow this to be done systematically.

These arrangements showed us that the obstacles to efficient home treatment might be grouped under three heads:—

1. *The ignorance or carelessness of many mothers*, together with their lack of appreciation of the extremely important part they have to play in the long-continued treatment of the disease, their traditions leading them to rely upon the bottle of medicine as the all-important factor, whilst they consider fresh air, good feeding, adequate sleep and rest as of little consequence.

A certain proportion of the mothers are not only ignorant, but quite indifferent to the welfare of their children; in these cases it is of great advantage that those who visit should be armed with the powers of sanitary inspectors; *e.g.*, a boy aged ten was sent to the dispensary as a suspected case, and was found to have signs of tuberculosis of the lung. He was sent to the city sanatorium for treatment, and the home was visited; the mother was a notified consumptive, and there were five children, of whom two had signs of consumption.

The mother was a careless, thriftless woman; there was evidence that the sputum flask had not been used; the house was always dirty and overcrowded. A notice *re* overcrowding was therefore served, as the case was well known to the inspector; as no improvement resulted, a summons letter was served shortly after. The result may be stated in the inspector's own words: "Removed to another house, conditions very much improved; rooms large and airy, health improved."

In no case in which such vigorous measures have been adopted has there been any evidence of ill will, the patients attending the dispensary regularly throughout.

Our usual experience, however, is that the mothers try to carry out the directions given when they have been shown how to do so in the home.

The lack of control of many mothers over their children has an important bearing upon the treatment, and is a matter which cannot be dealt with adequately.

2. *The houses from which the children come are extremely unsatisfactory* for the carrying out of the hygienic treatment required.

There are 16,000 back-to-back houses in Sheffield, and from these a large proportion of our cases come. These houses, together with the cheapest class of through-house, are either built flush with the street or in

common courts, thus making rest outside almost impossible, and sleeping in the open impossible. Although house reconstruction is out of the question as an immediate measure, much can be done by insisting on cleanliness, rearrangement of sleeping accommodation, etc. For example, on a home visit being paid, one child was found to be sleeping in the same bed as two other healthy children, though at the same time there was one vacant room occupied by pigeons. Here a cleansing notice was served and the sick child now occupies the pigeons' room.

3. In the majority of cases *the finances of the family are inadequate* to deal with the expenses likely to arise. These may be enumerated as follows: Money is required to remedy actual but not illegal overcrowding by moving into a larger house; to provide more food of a suitable character; and to provide separate sleeping accommodation for the patient.

The provision of a sufficient number of open-air day schools in parks or elsewhere will do much to solve the problem of feeding, whilst the loan of beds to suitable cases would help to protect the other members of the family. The treatment of the more acute cases is impracticable in the majority of the homes, whilst the city sanatoria provide educational treatment for a short period for the more chronic cases. We therefore find it necessary to urge that these cases be sent to union infirmaries.

The boards of guardians have taken an enlightened view of this problem, and encourage segregation in special accommodation provided for consumptives. This course is, however, limited, as many parents will not allow their children to go to the union, in some cases because they do not appear to be sufficiently ill, and in other cases because it is the union.

The foregoing considerations demonstrate the difficulties encountered in dealing with the child consumptive in its home surroundings.

The majority of cases (certainly all those that are well defined) require a preliminary course of treatment in a sanatorium or a residential sanatorium school. Many might be drafted to a sanatorium school direct, the more marked cases only passing through the sanatorium itself. The period of residence in such institutions would vary with the case, and should be of such length as to give the child a fair chance of maintaining its improvement upon return to its poor home surroundings.

Our experience is limited, but during the last three or four years a number of children with definite lung signs have been treated in the city sanatoria for periods varying from a month to two months, and have then returned to their homes; re-examination of a number of these cases this year has impressed us with the fact that the improvement then secured has been maintained in a large proportion.

In other instances, children who formerly had lung signs now present no definite evidence of tuberculous disease, but their general health is still below normal. This is shown by the fact that 4 per cent. of the children selected for the open-air school this year, who were classified under the heading of anæmia and malnutrition, were found, on examination of the records in the Public Health Department, to have been notified as consumptives some years ago. We therefore think it would be of very great advantage to follow up the treatment at the residential sanatorium school by a period of treatment at an open-air day school, and believe that this would enable the child to return to the ordinary day school much earlier than is possible under present conditions. It would then be the work of the school dispensary to follow up the child.

In considering this question, tuberculous disease of bones and joints must not be omitted, and the school tuberculosis dispensary should be responsible for the hygienic treatment and home supervision of surgical cases attending voluntary hospitals, and should draft suitable cases to cripple or to residential recovery schools.

PREVENTION.

(*a*) Adequate natural ventilation of school buildings (which implies that new buildings should be constructed upon an improved plan) is necessary, together with an extended use of the playground for classes and other methods of open-air teaching.

(*b*) It is very necessary that children presenting definite lung signs should be excluded from school in the interests of others. It is important to attend to the education of these children as numbers of them may never be sufficiently robust to earn their own living in heavy manual work, although the teaching of manual dexterity will probably be of more value to them in the future than more academic knowledge.

We have in mind two children, aged 9 and 10 respectively, who have never been able to attend school, and who can neither read nor write, but who are improving rapidly in a sanatorium, and who are now very suitable for admission to a school of this type.

One of the strong points in favour of residential treatment is in many cases the removal of a source of infection from the family.

(*c*) Foci of infection in schools may not be limited to the children, but may exist in teachers and caretakers.

It is the duty of the school medical officer to keep himself informed of such cases, and to examine suspects in order that he may take such measures as may be deemed necessary to protect the children.

(*d*) The routine supervision by the school medical officer of the medical certificates indicating the cause of absence of children from school is also of value, in that it enables him to follow up such children when they re-enter school after recovery from diseases which suggest the possibility of being tuberculous in origin.

(*e*) In the routine examination of child contacts of recently notified consumptives we find in addition to the children presenting definite tuberculous signs, a considerable number of doubtful cases and others who belong to the anæmia-malnutrition group. The drafting of such children to open-air day schools, when such are established in sufficient numbers together with medical supervision of the homes, will probably prove to be one of the most powerful factors in the raising of the child's resisting power, and the consequent prevention of the disease.

On Genetics as the Future Foundation of Eugenics; with Special Reference to the Work of the American Eugenic Record Office, by C. W. Saleeby, M.D., F.R.S.E.

MENDEL'S work on the edible pea, published in 1865, and rediscovered in 1900, led his foremost disciple, Professor William Bateson, to coin the word genetics for the study of the physiology of heredity and variation. The application of genetic theory to man is now established, but is yet only in its infancy. We know enough to be assured that the biometric methods, which aggregate different stocks and deal with only two generations, must be abandoned; the results are no foundation for eugenics. They have led to such conclusions as that infant mortality should not be interfered with, and that parental alcoholism does not injure the offspring. We require to make a fresh start.

Genetics teaches us that we must critically and separately examine stocks for at least three generations, in order to ascertain the laws of heredity. The only work upon man, in the realms of hygiene, which has yet been done, is practically confined to the American Eugenics Record Office, to the results and methods of which I would specially draw attention. By strictly following the methods of Mendel, the American workers have already obtained results as to the genetics of feeble-mindedness, epilepsy and the neuropathic taint, to which the highest importance must be attached. It is to be hoped that Dr. Kerr Love and Mr. Macleod Yearsley will quickly supplement this work by a similar study of the genetics of deaf-mutism. The American students are now at work upon the genetics of tuberculosis, as to which it may be said with considerable confidence that at present we know nothing whatever, no one having yet even attempted to discriminate between the three factors of infection, inherited susceptibility, and acquired susceptibility. Above all the Americans have taught us that the normal individual may carry and transmit a latent or recessive defect, and the defective individual may have normal offspring, according to Mendelian laws; so that our crude definitions of the fit and the unfit need extensive revision.

Briefly, the existing genetic evidence (and I believe none other to be of any value) lends no colour to the views of those whom, with convenient ambiguity, I call the "better-dead" school of eugenists, who approve of infant mortality and tuberculosis and alcoholism as weeding out the worthless. It offers no support to the view that the worth of the community is graded according to social status. It teaches us that the eugenics of class or caste is grossly unscientific; and that even within

given stocks, individuals vary, according to the law, as widely as the peas, apparently identical, in Mendel's pods.

My special purpose in writing this paper is to urge the desirability of recognising, in the study of the hygiene of infancy and childhood, opportunities for adding to our knowledge of human genetics, so that, some day, we shall be able to erect a true eugenics, applicable not merely to special cases like the feeble-minded, but to the community at large. Anyone who will study and compare the recent genetic work with what preceded it, will see that the right method is cardinal. The worker who would add to our knowledge in this all but virgin field, would do well to consult Mr. H. H. Laughlin, the Secretary of the Eugenics Record Office, Cold Spring Harbour, New York, who will be able to furnish examples of work done, and of the methods, simple, intelligible, exact, and entirely novel, which are being employed.

The advent of medical inspection offers unheard-of possibilities, and if those who did this work were all trained in genetic methods, in a decade our knowledge of human heredity would be multiplied a hundredfold. The rules yield themselves directly the question, as Bacon said, is "rightly put to nature." I most earnestly commend these considerations in the confidence that, until we begin to study our problems in this manner, we shall continue to delude ourselves as to human heredity, and that, when we do set rightly to work, National Eugenics, instead of, as now, alienating thousands for every individual whom it attracts, will convince the educated community at large. The discovery and use of this method is by far the most important advance in eugenics since the modern campaign began.

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THE ROYAL SANITARY INSTITUTE.

REVIEWS OF BOOKS.

The Water Supply of Surrey.*

This is the eleventh of an interesting and valuable series of County Water Supply Memoirs: and the seventh which Mr. Whitaker has written, or to which he has largely contributed.

The copious literature on subjects connected with underground water in Surrey, including several interesting descriptions of the bourne-flows of the Wandle Valley, has been summarised and also supplemented by Mr. Whitaker's exceptional knowledge and experience of this county.

The public health student will find much information in this volume on the subject of the contamination of water in the chalk.

Previously issued memoirs on underground water supply deal with the counties of Bedfordshire and Northamptonshire, Berkshire, Hampshire, Kent, Lincolnshire, Northamptonshire, Oxfordshire, Suffolk, Sussex, and Yorkshire (East Riding); and a memoir containing records of London wells is in the press.

H. R. K.

Report of the Metropolitan Sewage Commission of New York.†

This volume is a sequel to a previous report of April, 1910, and is in three parts; the first describes the serious conditions at present, the second deals with their amelioration and the measures which are required to cope with increase of population, and the third gives analytical data.

As we have found with sanitary legislation and procedure in the old country, there has been a regrettable delay in practical amendment in the new, since attention was called to the polluted state of the harbour by the New York Commissions of 1905 and 1906. Therefore this report decides that it will be necessary to make extensive improvements in the prevalent manner of disposing of the City's sewage, and to construct main drainage works as in other cities. A distinction is drawn between local nuisances due to "lack of prompt diffusion," and general nuisances caused after thorough mixture. Both are remedied by proper sewage works.

* The Water Supply of Surrey from Underground Sources, by William Whitaker, B.A., F.R.S.: with Contributions on the Rainfall, by Hugh Robert Mill, D.Sc., LL.D. Memoirs of the Geological Survey, England and Wales. Printed for His Majesty's Stationery Office, by Darling and Son, Ltd. London, 1912. 352 pp. Price 7s.

† Report of the Metropolitan Sewage Commission of New York, August, 1912, on the present sanitary condition of the harbour, and the degree of cleanness which is necessary and sufficient for the water. 457 pp., 4to. New York, 1912.

Chapter II. contains the evidence of experts called in by the Commission. Dr. Adeney noted that the shipping in the harbour constituted a constant and unavoidable source of pollution. The Commission, on page 70, gives a list of general standards of requirements which, with supplementary details, proscribe in the harbour:—

Visible garbage or sewage solids; marked discolouration or turbidity; and oil films.

In their periodical examinations of the dredged sediment, muds, and supernatant liquid in the harbour and neighbouring waters, the Commissioners centre their attention on the microscopic examination, numbers of bacteria, and absorption of dissolved oxygen, and the tabulated results, geographically illustrated by maps, indicate points of pollution and its degree. As to the relative importance of the methods of examination, there is a general agreement with our own Royal Commission, and at p. 297, the reasons are given which led the New York Commission "to employ dissolved oxygen determinations as an index of pollution in place of the more usual analyses for nitrogen in various forms." The main one is that the latter "are chiefly useful in indicating the amount and condition of the polluting matter, whereas the dissolved oxygen test shows the effect which the polluting matter has produced." Evidently when time allows, both should be practised as customary at present.

The report as a whole is exceedingly systematic, simple in explanations, and very instructive, and it is to be hoped that it will bring about the prompt sanitary action needed. S. R.

The Carrier Problem in Infectious Diseases.*

Before the science of bacteriology was founded, it was believed on clinical grounds (Trousseau, 1868) and later on epidemiological grounds (Thorne-Thorne, 1891) that severe cases of diphtheria could give rise by infection to mild cases, and these in turn to severe clinical cases. Further, it was also recognised on clinical grounds that patients who had recovered from an attack of diphtheria, and who had seemed perfectly well for two or three weeks, could still communicate the disease to others (Bristowe, 1884). In Loeffler's first description of his researches on the *B. diphtheriæ* he also recorded the fact that one of the virulent strains which he had isolated came from the throat of a perfectly healthy person.

Here, then, was the evidence, both clinical and bacteriological, of the "carrier" condition, but the time was not ripe, and as the pathogenicity of the diphtheria bacillus was not yet finally established, these earlier observations on its occurrence in healthy persons naturally tended to foster a general feeling of scepticism with regard to the pathogenic properties of this bacillus.

In spite, however, of early scepticism, the doctrine of "carrier" influence in diphtheria outbreaks became tacitly accepted for this disease; but no broad generalisation was made in regard to "carrier" influence generally until Koch's remarkable campaign in South-West Germany (1903–7) demonstrated the truth of his thesis that the chief source of typhoid infection is to be found in man himself, and opened the way to a wider understanding of the influence of the

* "The Carrier Problem in Infectious Diseases," by J. C. G. Ledingham, M.B., D.Sc., Chief Bacteriologist, Lister Institute, and J. A. Arkwright, M.D., Assistant Bacteriologist, Lister Institute. (International Medical Monographs, General Editors, Leonard Hill, M.B., F.R.S., and William Bulloch, M.D.) London, 1912, Edward Arnold. Price 12s. 6d. net.

"carrier" case in other communicable diseases. The demonstration of the importance of the intestinal carrier was undoubtedly due to this German campaign, but in England Horton-Smith had already (Goulstonian Lectures, 1900) called attention to the etiological importance of the chronic urinary carrier, a much rarer though probably more dangerous type.

In 1908 English carrier outbreaks were first described (Proc. Roy. Soc. Med., 1908, Epid. Sec., p. 175), and the condition is now accepted as an effective cause which has to be carefully reckoned with in the institution of preventive measures. In this volume, Drs. Ledingham and Arkwright deal, as the general editors point out, with a subject of the greatest importance to public health, in which is opened out a new department of hygiene, and in regard to which the question of legislative control has become a matter of immediate practical importance.

The authors have selected six diseases for consideration:—Enteric fever, paratyphoid fever and infections caused by organisms of the Gærtner-paratyphoid group, diphtheria, epidemic cerebro-spinal meningitis, dysentery, and cholera, because only in these instances is there sufficient exact knowledge at hand, though there is little doubt that before long it will be possible to include many other infectious diseases in the same category. They have approached the subject mainly from the bacteriological side, with due appreciation of the epidemiological point of view, and they offer the work in hopes that it may prove of service to the epidemiologist and bacteriologist, as well as to public health authorities.

We believe, from a study of the work, that the authors have succeeded in their endeavour. The book is well printed and bound, and is provided with an ample bibliography. D. S. D.

FORTHCOMING MEETINGS.

Sessional Meeting.

London, Tuesday, February 11th, at 7.30 p.m. Discussion on "Eighth Report of The Royal Commission on Sewage Disposal on Standards and Tests for Sewage and Sewage Effluents discharging into Rivers and Streams," to be opened by Samuel Rideal, D.Sc., F.I.C., J.P.

Students' Lectures.

The Fifty-fourth Course of Lectures and Demonstrations for Sanitary Officers will commence on Monday, February 3rd.

Courses of Lectures on School Hygiene, including Elementary Physiology, and for Women Health Visitors and School Nurses, will commence on Monday, February 24th.

Course of Practical Training for Meat Inspectors will commence on Friday, February 14th.

The Special Course on Food and Meat Inspection, arranged for Army Officers and Professional Men, will commence on Monday, April 7th.

Examinations.

In Sanitary Science as applied to Buildings and Public Works, for Inspectors Qualifying for Membership, for Inspectors of Nuisances, in School Hygiene, including Elementary Physiology, and for Women Health Visitors and School Nurses:—

Exeter, January 17th & 18th | Preston, January 31st & February 1st.

For Inspectors of Meat and Other Foods:—

Grimsby, February 14th & 15th.

Annual Meeting of Associates.

The Annual Meeting of Associates is fixed for Tuesday, March 18th.

Ordinary General Meeting.

The Ordinary General Meeting is fixed for Wednesday, April 23rd, at 4 p.m.

Lecture to the Institute.

Wednesday, April 23rd, at 5 p.m., on "Insect-carried Diseases, and their Prevention," by C. H. Daniels, M.B., M.R.C.S.

Congress and Exhibition, 1913.

The Right Hon. Earl Fortescue, K.C.B. (Lord Lieutenant of the County of Devonshire) has consented to act as President of the Twenty-eighth Congress and Exhibition of the Institute, to be held at Exeter by invitation of the City Council from July 7th to 12th, 1913.

The Public Meeting to inaugurate the local arrangements will be held in the Guildhall, Exeter, on Friday, January 17th, at 3.30 p.m.

COLONIAL MEETINGS.

South African Branch Congress, 1913.

The Second Congress of the South African Branch of the Institute is to be held in Johannesburg, March 10th–12th, not December, as previously announced. Full particulars can be obtained from the Hon. Secretary of the Branch, Prof. A. E. Snape, Assoc.M.Inst.C.E., South African College, Cape Town.

MEETINGS HELD.

Examinations.

In Sanitary Science as applied to Buildings and Public Works, for Inspectors Qualifying for Membership, for Inspectors of Nuisances, in Hygiene, including Elementary Physiology, and for Women Health Visitors and School Nurses have been held at:—

Manchester, November 29th & 30th | London, December 6th & 7th.

Inspectors of Meat and other Foods.

London, December 13th and 14th.

At these Examinations 243 candidates presented themselves, and the following were awarded certificates:—

Inspectors Qualifying for Membership.

Eginton, Arthur Thomas.

Sanitary Science as applied to Buildings and Public Works.

Cranfield, Edward George Shaw.
Gosling, Percy Frederick.
Hall, Walter Howard.
Jagtap, Balkrishna, Piraji.
Masters, Walter E.
Rees, Griffith John.
Weeks, Edred.
White, Arthur.
Wortley, Robert Kendal.

School Hygiene, including Elementary Physiology.

Branton, Eva Mary.
Clarke, Bertha.
Duff, Dorothy Annie.
Hudson, Grace E.
Jones, Dilys.
Lyne, Evelyn Woodyeare.
Moriarty, Emily Alicia.
Richardson, Augusta Florence.
Turner, Norah Elizabeth.

Women Health Visitors and School Nurses.

Ainger, Isabel.
Arnold, Ella.
Baker, Dora Elizabeth.
Barton, Harriette.
Buckell, Mary Frances.
Clarkson, Daisy.
Collins, Lillie Annie Eliza.
de Koster, Wilhelmina Jannetje Marie.
Dudley, Mary.
Dunlop, Edith Marianne.
Edmondson, Bessie E.
Garside, Margaret.
Jones, Winifred.
Marshall, Sarah Ethel.
Millington, Hannah.
Molony, Alice Maud Elizabeth.
Parsons, Rachael.
Reynolds, Rhoda Mary.
Simpson, Priscilla.
Soper, Annie Georgina.
Stones, Eliza.
Stubbs, Inez Gwendolyn Maraginta.
Thorpe, Lydia Beatrice.

Inspectors of Nuisances.

Barwise, Alice.
Blackford, George Henry.
Boardman, Harold.
Boothroyd, Florrie.
Box, Allan Cyril.
Brake, John Francis Eustace.
Brown, Harry.
Burton, Thomas Fowler.
Byard, Amy.
Capon, Jethro Alexander.
Chapman, Ebenezer John Juler.
Clayton, Arthur.
Connolly, Robert George.
Cornish, Francis George.
Cutting, William Alexander.
Dobson, William Harper.
Eden, Thomas.
Eldred, Ernest Frederick.
Ensor, William Henry.
Feaster, Robert.
Green, Joseph Alexander.
Hagues, John.
Holman, Annie Marguerite.
Howard, Dennis Victor.
Howard, John Gulliver.
Huckle, George Henry.
Huntley, Augustus George Fowler.
Kedgley, Harry James.
Keene, Frank.
King, Christopher.
Lovatt, Ernest.
Lovelock, Henry William.
Mackintosh, William Robert.
Mellor, Leonard.
Miller, Joseph.
Morris, William Davies.
Morton, Louise Mary.
Newman, Henry John, Junr.
Parkins, Annetta.
Parry-Hughes, John.
Perchard, Charles Stanley.
Perkins, Emma Read.
Pilgrim, Percy.
Poole, Dorothy Celia.
Raine, Leonard.
Rattray, John.
Riccomini, James Arthur.
Rodgers, Joseph.
Smith, Fred.
Trollope, Stanley.
Warren, Elizabeth Ann.
Waterfall, Frank.
Watson, Thomas Mark.
Wheeler, Edward Owen.
Wheeler, Harold Edward.
Whiston, Noah.
White, Arthur.

Inspectors of Meat and other Foods.

Barry, Frank Quick.
Brown, Henry John.
Bryant, Horace Benjamin.
Buxton, Frank Grant.
Clinch, Herbert George.
Fowler, George Henry.
Hargrave, Ernest Leslie George.
Harris, Henry Oswald.
Hill, George Thomas.
Hooper, Harold.
Ingleton, William.
James, William.
Morgan, Albert E.
Perrett, Herbert John.
Saulez, Alfred Gordon.
Spears, Ernest Godwin.
Thomas, John.
Twaites, James.
Veness, Henry Frederick.
Wheeler, Percie William.
Wood, Frank.
Young, J. Bishop.

Calendar for January and February, 1913.

As far as at present arranged.

JANUARY.

17 F. **Exeter.** Public Meeting in the Guildhall at 3.30 p.m., to inaugurate arrangements for the Congress.

17 F. } Examinations—Exeter.
18 S. }

31 F. }
Feb. } Examinations—Preston.
1 S. }

FEBRUARY.

3 M. Lecture to Sanitary Officers, at 7 p.m. Sanitary Law, A: Public Health Acts—English, Scotch, and Irish, by A. Wellesley Harris, M.R.C.S., M.O.H., Lewisham.

5 W. Lecture to Sanitary Officers at 7 p.m. Sanitary Law, B: Public Health (London) Act, etc., by A. Wellesley Harris, M.R.C.S., D.P.H.

7 F. Lecture to Sanitary Officers at 7 p.m. Sanitary Law, C: Factory and Workshop Act, etc., by A. Wellesley Harris, M.R.C.S., D.P.H.

8 S. Inspection and Demonstration in the District of Chiswick at 3 p.m. Conducted by J. H. Clarke, Chief Sanitary Inspector, Chiswick.

10 M. Lecture to Sanitary Officers 7 p.m. Duties of a Sanitary Inspector—General A, Outdoor, by A. Wellesley Harris, M.R.C.S., D.P.H.

11 Tu. Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, at the Public Health Office, Town Hall, Upper St., Islington, N., at 6 p.m., by James R. Leggatt, Supt. Public Health Dept., Borough of Islington.

11 Tu. **Sessional Meeting,** London, at 7.30 p.m. Discussion on "Eighth Report of The Royal Commission on Sewage Disposal on Standards and Tests for Sewage and Sewage Effluents discharging into Rivers and Streams," to be opened by S. Rideal, D.Sc., F.I.C., J.P.

12 W. Inspection and Demonstration at Messrs. E. Cook & Co.'s Soap Works, Bow, E., at 3 p.m.
Lecture to Sanitary Officers at 7 p.m. Duties of a Sanitary Officer—Duties B, Indoor, by A. Wellesley Harris, M.R.C.S., D.P.H.

14 F. Lecture to Sanitary Officers at 7 p.m. Duties of a Sanitary Inspector. Offensive Trades and Trade Nuisances, etc., by A. Wellesley Harris, M.R.C.S., D.P.H.
Lecture—Meat Inspectors' Course, at 7 p.m.

14 F. } Examination for Inspectors of Meat and other Foods—Grimsby.
15 S. }

MARCH.

10 M. } **Johannesburg.** Second Annual Congress of the South African Branch.
11 Tu. } Particulars can be obtained from Prof. A. E Snape, South African College,
12 W. } Cape Town.

18 Tu. **Annual Meeting of Associates.**

APRIL.

23 W. **Ordinary General Meeting,** at 4 p.m.
Lecture to the Institute at 5 p.m., on "Insect-carried Diseases, and their prevention," by C. H. Daniels, M.B., M.R.C.S.

JULY.

7-12 **Congress and Exhibition,** Exeter. President: The Right Hon. Earl Fortescue, K.C.B. (Lord Lieutenant of Devonshire).

LIST OF MEMBERS AND ASSOCIATES

ELECTED DECEMBER, 1912.

MEMBERS.

‡ Marked thus have passed the Examination of the Institute for Inspectors of Nuisances.

* Marked thus have passed the Examination in Sanitary Science as applied to Buildings and Public Works.

M Marked thus have passed the Examination of the Institute for Inspectors of Meat and Other Foods.

S Marked thus have passed the Examination in Hygiene in its bearing on School Life.

Reg. No.	Date of Election.	
3339	1912. Dec.	ARCHER, Bernard, 132, *Westfield Road, Wellingborough.*
3340	1912. Dec.	BRAGGINS, Arthur Dove, *Council Chambers, Newquay, Cornwall.*
3341	1912. Dec.	EDWARDS, Spencer, P.A.S.I., 9, *Castle Street, Barnstaple.*
3342	1912. Dec.	ENNOR, John, *Surveyor, Engineer, and Sanitary Inspector, Council Chambers, Newquay, Cornwall.*
3343	1912. Dec.	EVANS, Albert Edward, M.B., B.S., D.P.H., *(Assist. M.O.H.), Ansdell, Sandy Lane, Prestatyn, Flint.*
3345	1912. Dec.	*FIRTH, Miss Agnes, M.SC.TECH., 22, *Scarr Hill, Eccleshill, Bradford.*
3344	1912. Dec.	‡FOLLAND, Gordon Radmore, P.A.S.I., *Surveyor's Assistant, Borough Surveyor's Office, Gravesend.*
3350	1912. Dec.	*M* HODGKINS, Capt. John Rowland, M.R.C.V.S., *Army Veterinary Corps, Royal Barracks, Dublin.*
3345	1912. Dec.	HOLDEN, Fred Hague, *Assistant Surveyor, Council Offices, Lytham, Lancs.*
3346	1912. Dec.	LAKE, Wallace Strickland, ASSOC.M.INST.C.E., *Assist. Director of Public Works, Freetown, Sierra Leone, West Africa.*
3347	1912. Dec.	*S*‡MAYNARD, Miss Edith Louisa, 22, *Southend Road, Beckenham, Kent.*
3348	1912. Dec.	‡NYE, Albert William, M.S.A., 34, *Duke St., Brighton.*
3349	1912. Dec.	PRICE, William Joseph, *Vernon House, Sicilian Avenue, Bloomsbury, W.C.*
3337	1912. Dec.	*RIGBY, George, *c/o Capt. J. Stephens, Belle Vue, Panchgani, Satara District, India.*
3339	1912. Dec.	RODWELL, John Arthur, *Borough Engineer's Office, Dewsbury.*
3351	1912. Dec.	‡SEELS, George Minard, ASSOC.M.INST.C.E., *Council Offices, New Malden, Surrey.*
3352	1912. Dec.	SMITH, Isaac Wallis, M.S.E., 47, *Eccles Road, Clapham Junction, S.W.*
3353	1912. Dec.	STANTON, Ambrose Thomas, M.B (TOR.), M.R.C.S.ENG., D.T.M.&H.CAMB., 3, *Ryder Street, St. James', S.W. (Kuala Lumpur, Federated Malay States.)*
3354	1912. Dec.	WELLINGTON, Arthur Robartes, M.R.C.S., L.R.C.P. LOND., D.T.M.&H.CAMB., 37, *Charleville Road, West Kensington. (Health Officer, Perak North, Federated Malay States.)*

ASSOCIATES.

V Marked thus have passed the Examination of the Institute for Women Health Visitors and School Nurses.

S Marked thus have passed the Examination in School Hygiene, including Elementary Physiology.

‡ Marked thus have passed the Examination of the Institute for Inspectors of Nuisances.

Reg. No.	Date of Election.	
5977	1912. Dec.	‡ANGUS, William, 24, *Bell Street, Cockton Hill, Bishop Auckland.*
5978	1912. Dec.	VBRAMALL, Miss Edith Annie, *Grosvenor House, Tetbury, Glos.*
5979	1912. Dec.	SBRIGGS, Miss Daisy, *Hartwell House, Stanhope, Co. Durham.*
5980	1912. Dec.	VCLARKSON, Miss Daisy, 210, *Yorkshire Street, Rochdale.*
5981	1912. Dec.	‡CURR, Mitchell, 25, *Wallfield Place, Aberdeen.*
6952	1912. Dec.	‡EGINTON, Arthur Thomas, *Public Health Dept., Town Hall, Chester.*
5983	1912. Dec.	M‡FOWLER, George Henry, 105, *Fawnbrake Avenue, Herne Hill, S.E.*
5984	1912. Dec.	‡GILL, Herbert William, 36, *Chelmsford Street, Weymouth.*
5985	1912. Dec.	‡HALL, Miss Freda May Alexandra, *c/o Nurse Hart, Church Road, Northwood, Middlesex.*
6000	1912. Dec.	‡HILHAM, George Henry, 77, *Lower Cliff Road, Gorleston, Gt. Yarmouth.*
5986	1912. Dec.	‡HIRST, Robert Tom, 23, *Yarra Road, Cleethorpes, Lincs.*
5987	1912. Dec.	‡KNIGHT, John Arthur, 20, *Cobden Street, Allerton, Bradford.*
5988	1912. Dec.	‡LOVATT, Ernest, *Oak Tree House, Talke, Stoke-on-Trent.*
6001	1912. Dec.	‡MANTOR, Charles, 162, *Park Lane, Tottenham, N.*
5976	1912. Dec.	MARTIN, Alfred John, F.S.I., *Surveyor and Land Agent, Alton, Hants.*
5989	1912. Dec.	‡METCALFE, Harold Robson, 8, *Amber Street, Saltburn-by-the-Sea.*
5990	1912. Dec.	‡MILLER, Joseph, 143, *Drury Lane, Chadderton, Lancs.*
5991	1912. Dec.	‡NOBLE, Basil Henry, *Bourne Road, Alford, Lincs.*
5992	1912. Dec.	SOLIVER, Charles, 44, *George Street East, New Herrington, Fence Houses, Co. Durham.*
5993	1912. Dec.	VPARSONS, Miss Rachel, *Nelson House Nursing Home, Manchester.*
5994	1912. Dec.	‡PERCHARD, Charles Stanley, 78, *Falkland Road, Egremont, Ches.*
5995	1912. Dec.	‡ROWE, Arthur, 240, *Whitehall Road, Bensham, Gateshead.*
5996	1912. Dec.	VSADLER, Miss Winifrede Mary, *Nurses' Cottage, Byfield, Northants.*

5197 1912. Dec. ‡Straker, John, *Walkergate Street, Alnwick, Northumberland.*

5198 1912. Dec. ‡Thompson, Thomas, Junr., *Red House, Methley, nr. Leeds.*

5199 1912. Dec. ‡Whiston, Noah, 580, *Leek Road, Shelton, Stoke-on-Trent.*

Fees for Life Commutation.

The Council have decided, in accordance with the power vested in them by Clauses 11 and 18 of the Articles of Association, that after January 1st, 1913, the amounts payable as the Life Commutation of the subscription for Membership and Associateship shall be as follows:—

For subscriptions at the rate of £2 2s. annually, a payment in one sum of £26 5s.

For subscriptions at the rate of £1 1s. annually, a payment in one sum of £15 15s.

For subscriptions at the rate of 10s. 6d. annually, a payment in one sum of £10 10s.

Graduated scales have been adopted for different periods of Membership, particulars of which can be obtained on application.

Members and Associates elected prior to January, 1913, may, if they wish to do so, compound at the old rates.

CONTRIBUTIONS AND ADDITIONS TO LIBRARY.

December, 1912.

*** *For publications of Societies and Institutions, etc., see under "Academies."*

ACADEMIES (British).

London. *Association of Managers of Sewage Disposal Works.* List of Members and Associates, and Proceedings for 1910. 151 pp., 8vo. London, 1911. *The Association.*

——— *Auctioneers and Estate Agents' Institute of the United Kingdom.* Annual Record, Vol. II., Part I. Presidential Address by A. W. Brackett. 35 pp., 8vo. London, 1912. *The Institute.*

——— *Institution of Civil Engineers.* Minutes and Proceedings, Vol. CLXXXIX. 456 pp., 8vo. London, 1912. *The Institution.*

——— *Institution of Mechanical Engineers.* General Index to Proceedings. 1901–1910. 395 pp., 8vo. Proceedings, April–May, 1912. 585 pp., 8vo. London, 1912. *The Institution.*

——— *Institution of Water Engineers.* List of Members, January, 1912. 43 pp., 8vo. London, 1912. *The Institution.*

——— *Royal Institution of Great Britain.* List of Members, 1912. 85 pp., 8vo. Proceedings, Vol. XIX., Part III. 196 pp., 8vo. London, 1912. *The Institution.*

Army. Report on the Health for 1911, Vol. LIII. 229 pp., 8vo. London, 1912. *Director-General W. L. Gubbins.*

Board of Education. Annual Report of the Chief Medical Officer for 1911. 334 pp., 8vo. London, 1912. *Sir George Newman, M.D. (Chief Medical Officer).*

Delépine, *Prof. Sheridan.* Bovine Tuberculosis. 11 pp., 8vo. London. 1912.

——— The share taken by Human and Bovine Tuberculous Products in the Infection of Young Children. 23 pp., 8vo. London, 1912. *The Author.*

Fowler, *Gilbert J., D.Sc., F.I.C., and* **Clifford, W.** Notes on Methods of Differentiating Soils for Sewage Purification. 22 pp., 8vo. London, 1912. *The Authors.*

Lemmoin-Cannon, *H., P.A.S.I.* A Text-book on Sewage Disposal in the United Kingdom. 320 pp., 8vo. London, 1912. *The Publishers (St. Bride's Press, Ltd.)*

Mather, *Florence L.* Lessons in Infant Management. 112 pp., 8vo. London, 1912. *The Author.*

MEDICAL OFFICERS OF HEALTH AND OTHER SANITARY REPORTS.

Capetown, City of, 1911–1912 .. *A. Jasper Anderson, M.B., D.P.H.*
Cornwall C.C., October, 1912 .. *Robert Burnet, M.B., D.P.H.*
Devon C.C. (National Insurance Act, 1911) .. .. *George Adkins, M.D.*
Gloucestershire C.C., 1911 .. .. *J. M. Martin, M.D.. D.P.H.*
Kent C.C., 1911 .. .. .. *W. J. Howarth, M.D., D.P.H.*
London, City of, Five weeks ending 16th November, 1912 .. .. *W. Collingridge, M.D.*
Nottingham, City of, 1911 .. .. *Philip Boobbyer, M.D.*
Queensland, 30th June, 1912.. .. *J. S. C. Elkington, M.D., D.P.H.*
Sydney, 1911 .. .. *W. G. Armstrong, M.D., D.P.H.*
Wiltshire C.C., 1911 .. .. .. *J. Tubb-Thomas, L.R.C.S., D.P.H.*

New York. *Metropolitan Sewerage Commission.* Report on Present Sanitary Condition of New York Harbour, and the Degree of Cleanness which is necessary and sufficient for the Water. 456 pp., 4to. New York, 1912. *George A. Soper, President.*

Odell, *W., M.D., F.R.C.S.* Further Evidence of the Value of the Treatment of Pulmonary Tuberculosis with Ichthyol. 7 pp., 8vo. Torquay, 1912. *The Author.*

Royal Commission on Sewage Disposal. Eighth Report on Standards and Tests for Sewage and Sewage Effluents discharging into Rivers and Streams. 17 pp., fcap. London, 1912. *Purchased.*

Scotland, Registrar-General. Report of the Twelfth Decennial Census, 1911. Vol. I., Part 25. County of Linlithgow. 46 pp., fcap. London, 1912. *J. Patten Macdougall (Registrar-General).*

"Surveyor and Municipal and County Engineer," *Editor of.* The Civic Engineer's Who's Who, 1912. 120 pp., 8vo. London. 1912. *The Publishers (St. Bride's Press, Ltd.)*

Wakefield, *Bishop of.* Homes of the People: Housing. 5 pp., 8vo. London, 1912. *The Author.*

THE FOLLOWING JOURNALS AND PERIODICALS HAVE BEEN RECEIVED IN THE LIBRARY DURING 1912.

WEEKLY.

British Architect.
British Journal of Nursing.
British Medical Journal.
Builder.
Chicago Health Bulletin.
Contract Journal.
Domestic Engineering.
Engineering.
Engineering News (New York).
Hardware Trade Journal, The.
Hospital.
Indian Engineering.
Irish Builder and Engineer.
Journal d'Hygiène.
Journal of the Royal Society of Arts.
Lancet.
Local Government Chronicle.
Local Government Journal.
London County Council Gazette.
Meat Trades Journal.
Medical Officer.
Municipal Journal.
Nursing Times.
Sanitary Record.
School Government Chronicle.
Southern Builder.
Surveying and Housing World.
Surveyor and Municipal and County Engineer.
Veterinary Record.
,, News.

MONTHLY AND QUARTERLY.

Agricultural Economist.
Annales des Ponts et Chaussées.
Bollettino Sanitario.
British Journal of Inebriety.
British Journal of Tuberculosis.
Bulletin du service de Santé et de l'Hygiène publique (Bruxelles).
Canadian Nurse.
Canadian Public Health Journal.
Child-Study.
Concrete.
Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege.
Engineering Magazine.
Ferro-Concrete.
Giornale della Reale Società Italiana d'Igiene.
Glasgow Medical Journal.
Health.
Illuminating Engineer.
Iowa Health Bulletin.
Journal of Hygiene.
Journal, American Institute of Architects.
Journal of the Architectural Association.
Journal of the Royal Army Medical Corps.
Journal of the Royal Institute of British Architects.
Journal of the Royal Meteorological Society.
Journal of the Royal Statistical Society.
Journal of the Sanitary Inspectors' Association.
Journal of the Society of Architects.
Journal of State Medicine.
La Salute Pubblica (Perugia).
La Technique Sanitaire.
Local Government Review.
Le Mois Medico-Chirurgical.
L'Hygiène Scolaire.
Malaya Medical Journal.
Meteorological Record.
New York State Board of Health, Monthly Bulletin.
Paris Office International d'Hygiène Publique (Bulletin Mensuel).
Paris Médical.
Plumber and Decorator.
Plumbing Trade Journal.
Public Health.
Registrar-General's Returns: England and Wales, Scotland, and Ireland. Weekly, Monthly, and Quarterly.
Revue d'Hygiène et de Police Sanitaire.
Royal Engineers' Journal.
Sei-i-Kwai Medical Journal.
Surveyors' Institution, Transactions of.
Symons's Meteorological Magazine.
Water.

EXHIBITS ADDED TO THE MUSEUM.

Flies and Parasites. Illustrations and Specimens of the several flies and parasites injurious to man have been arranged in the North Gallery, and a descriptive catalogue of the Section has been made by Dr. Louis Parkes, and can be obtained in the Museum.

Heating Apparatus. A full-size model of low-pressure, hot-water system, showing a good arrangement for obtaining efficient circulation in the pipes. Put up under the direction of the Museum Committee by Messrs. Cash & Co.

Hot-water Supply. A full-size model, showing a good arrangement of a system of hot water supply for domestic purposes, the supply and storage tanks, and the placing of the several draw-off taps usually required. Erected, under the direction of the Museum Committee, by Messrs. Cash & Co.

Model Abattoir. Ground Plan and Prospective Drawing and Model, for a town with a population of between 35,000 and 40,000 inhabitants. R. Stephen Ayling, Architect. *The Model Abattoir Society, 25, Craven Street, W.C.*

"Princess Christian" Bed Rest. Framework contrived to adjust head and shoulder; collapsible when not in use. *Miss Todd, 33, St. Olave's Rd., York.*

Hearing Test. Apparatus for use in Schools, etc. Its chief feature being that the pupil is unable during test to see position from which sound proceeds. *Dr. E. T. Nash, M.O.H., Wimbledon.*

"Galvo" Chemical Fire Extincteurs. One 2-gallon copper and 2-gallon steel. Each charged with 1 lb. bicarbonate of soda and 6 oz. sulphurated acid, with automatic hose connection, ball valve to prevent spilling and evaporation. *Webb Lamp Co., Ltd., 11, Poultry, London, E.C.*

Wind-adjusted Shelter. Automatically revolving on ball bearings. Framed drawing and description. *John Walker Steel, 31, Northgate, Hartlepool.*

Sanitary Enamels. "Endelline," "Endelflat," and "Lacreite." Two panels, showing enamels on wood surface and on plaster. *Thos. Parsons & Sons, 8, Endell Street, Long Acre, W.*

Paving Bricks. Vitrified adamantine, grooved for court yards and other outdoor pavings, various sizes and patterns. Vitrified annealed roundway and channel paving bricks. *Crossley & Sons, Ltd., Middlesborough.*

Rock-faced Bricks. For quoins and other relief work: hand pitched. Buff, red, or mottled colour. *Crossley & Sons, Ltd., Middlesborough.*

Road Making, Paving, etc. Specimens of Wicklow Granite, Parnel Quarries, suitable for roadwork concrete.

Slates. Roofing, various sizes, Ormande Quarries.

Granite. Specimen Slab, Crowreagh, Newry Quarries. *Irish Industrial Association (J. Cooke Taylor, Hon. Secretary).*

Pump, "Little Giant." A domestic or plumbing tool for the purpose of withdrawing or forcing through obstructions in closets, lavatories, or drains. *Hector MacFarlane, 317, High Holborn, W.C.*

Lantern Slides (25). Sewerage and refuse disposal, works, plant, etc. *Manlove, Alliott & Co., Ltd., Bloomsgrove Works, Nottingham.*

Tiling. Semi-circular panel, with central monogram R.S.I., on west wall of ground floor. *Minton, Hollins, & Co., Stoke-on-Trent.*

Sink. White glazed earthenware, Belfast type, with roll rim and weir overflow and pedestals for same. *Rufford & Co., Ltd., 30, Snow Hill, E.C.*

Ventilator. Stott's Quadrant Inlet Ventilator.
James Stott & Co., 158, Queen Victoria Street, E.C.

Earth Closet. Seat action type, with glass front to receptacle for ashes, etc.
British Sanitary Co., 341, Bath Lane, Glasgow.

Flushing Cistern. 2-gallon, silent action, with glass front.
A. Emanuel & Co., George Street, Manchester Square, W.

Brass Taps. Case fitted with various types, complete and in section.
A. Emanuel & Co., George Street, Manchester Square, W.

NEW PREMISES EQUIPMENT FUND.

DONATIONS DURING 1912.

The following additional donations have been received from Members and Associates, and the Council desire to express their thanks to these Members and Associates for the help thus given in the equipment of the Institute's premises:—

James Felgate	(4th Donation)	£1	1 0
Sir Robert Pullar		1	0 0
J. Catterall	(Additional Subscription)		10 6
W. Quintin Williams			9 0
T. Meazey	(3rd Donation)		5 0
		£3	5 6

December 31st, 1912.

HEALTH EXHIBITION, YORK, 1912.

ADDITIONAL AWARDS.

Silver Medal.

Slack & Brownlow.
For Brownlow Germ Filter.

Bronze Medals.

Thomas Howse, Ltd.
For Paints.

Tuke & Bell, Ltd.
For Rotary Sprinkler with Direct Acting Tipper.

EXHIBITS FOR WHICH MEDALS HAVE BEEN AWARDED AT THE HEALTH EXHIBITION, YORK, 1912.

Model Abattoir.

Silver Medal.

To The Model Abattoir Society.

In planning these buildings, provision has been made for preparing the average amount of home grown and home killed meat, suitable for a town with a population of between 35,000 and 40,000 inhabitants, but space has been allowed for ample extension of the main buildings.

In the design the whole of the recommendations of the Royal Commission on Tuberculosis (1898) and the Admiralty Commission on humane slaughtering (1904) have been carried out.

The animals coming to the abattoir would be conveyed by railway, thus obviating the necessity of driving them through the public thoroughfares. They would then be disembarked on stages provided for this purpose, and taken to the lairs until ready for slaughter.

The lairs are placed adjoining the "stunning courts," and separated from them by means of sliding doors.

A chill room is shown in the centre of the main building, but this space could be utilised also for an additional cooling court if no chill room is required.

Facilities for inspection have been provided by a gallery placed above the trackways and overlooking both the stunning and dressing courts.

A separate building is provided for dealing with pigs.

An office for the Veterinary Inspector has been placed close to the disembarking stage, and adjoining it are the lairs, stunning court, dressing court, and cooling court, for any animals found to be infected or under suspicion.

An office (with weighing table adjoining) has been provided at the main entrance for the Veterinary Inspector or his deputy, and also a residence consisting of bedroom, kitchen, living room, bath, water-closet, etc.

A clothes changing room, mess room, bath, and water-closet for the slaughterers are placed adjoining the Inspector's quarters.

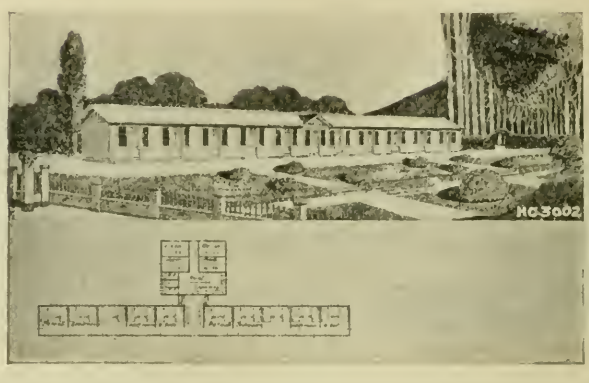
The remaining accommodation consists of workshop, boiler house, two-stall stable and coach house, general sanitary block, and a large room for additional lairs to be used upon particularly busy occasions.

The design has been prepared for the Model Abattoir Society (Secretary, Bertram Richardson), 25 Craven Street, London, W.C., by Mr. R. Stephen Ayling, F.R.I.B.A., M.R.San.I.

Temporary Building for Sanatoria.

Silver Medal.

To Hygienic Constructions and Portable Buildings, Ltd.



"Standard" building in light construction. This type of building is made in one size only, 50 ft. by 16 ft. It is portable and can be erected within one day.

Prices on application.

Manufactured by Hygienic Constructions and Portable Buildings, Ltd., Stockholme Road, South Bermondsey, London, S.E.

Wind Adjusted Shelter.

Bronze Medal.

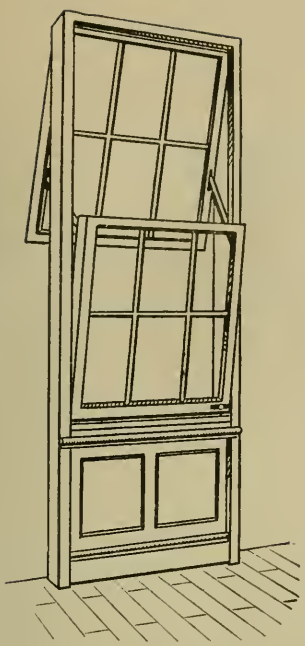
To John Walker Steel.

The shelter revolves, and is provided with a large wind vane so as to keep the open front always away from the wind.

Sizes.—9 ft. square opening, 6 ft. high, 4 ft. wide at back, 7 ft. 6 ins. long.

Price.—£25 carriage forward, exclusive of concrete foundation.

Manufactured by J. W. Steel, 31 Northgate, Hartlepool.



The "Austral" Window.

Bronze Medal.

To The "Austral" Window Balance Co., Ltd.

Sash windows without cords and weights providing means for the supply of fresh air, and so constructed that each sash can be cleaned on both sides from the inside of the room.

Sizes.—Can be made practically of any size.

Prices.—Prices vary as to the sizes of windows and material used. We supply either the windows complete or the fittings only.

Manufactured by The "Austral" Window Balance Co., Ltd., 3 Macdonald's Lane, Corporation Street, Manchester.

Reversible Locking Windows.

Silver Medal.

To The Chaddock Ventilation Co., Ltd.

The windows are built in such manner as to enable the operator not only to regulate the amount of air entering, at all seasons, but also to so control its direction as to ensure even heat and air distribution in winter months, thus ensuring ventilation by the open window without discomfort.

Sizes to requirements.

Prices according to sizes.

Manufactured by Chaddock Ventilation Co., Ltd., 22 to 25 Cornhill, Wapping, Liverpool.

The "Don" Fanlight Opener.

Bronze Medal.

To The "Don" Fanlight Opener Co.

The "Don" Opener is suitable for all fanlights hung either on centre pivots or hinged at the bottom and opening inwards.

Prices.—Malleable iron, electro-bronzed, 4s. 6d. each. Brass, lacquered and polished, 6s. 6d. each. Keys 6d. each. 1 key supplied free on orders of 12.

Manufactured by The "Don" Fanlight Opener Co., 101, Leadenhall St., London, E.C.

Disinfecting Liquids.

Bronze Medal.

To McDougall Bros.

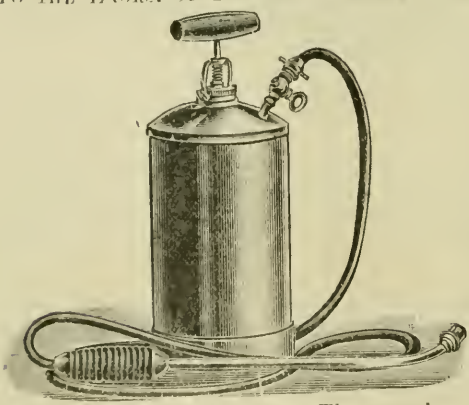
McDougall's Fluids are manufactured in different grades to suit all purposes.

Manufactured by McDougall Bros., 66/68, Port Street, Manchester.

Formalide Sprayer.

Bronze Medal.

To the Exors. of the late William Sharratt.



The No. 1 "Formalide" Sprayer (as shown in the illustration) is self contained, made of strong copper, with a powerful pump down the centre, and a spraying rod connected with the tap by a rubber tube. The spray emitted is very fine, and a small quantity of liquid will cover a large area of wall space when used in this sprayer. Disinfectant is poured in until the sprayer is two-thirds full, the remaining space being left for compressed air. There is a safety valve in the filler cap. The pump handle, when hooked to the body, serves to carry the sprayer. The spraying rod can be extended by the addition of extra lengths.

Sizes.—No. 1, 3 pints, £2 5s.; No. 2, 1 gal., £3 10s.; No. 3, 2 gal., £4 10s.

Manufactured by The Exors. of the late William Sharratt, Tower Works, Clayton, Manchester.

Mastic Asphalte for Roofs.

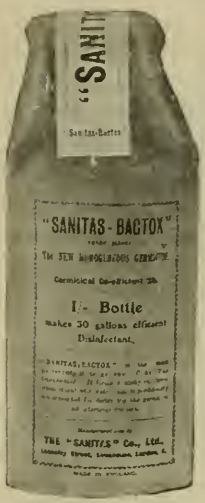
Bronze Medal.

To the Limmer Asphalte Paving Co., Ltd.

Natural mineral rock mastic asphaltes for roofing, flooring, horizontal and vertical damp course, also for footways and carriageways. Limmer and Montrotier seyssel brands.

Prices upon application.

Manufactured by The Limmer Asphalte Paving Co., Ltd., Caxton House, Westminster, S.W.



"Sanitas Bactox."

Bronze Medal.

To "Sanitas" Co., Ltd.

A homogeneous Coal Tar Disinfectant.

"Sanitas Bactox" yields a perfect emulsion when mixed with fresh water, and is indicated for use not only as a disinfectant, but also in medical and surgical practice.

Size.—1s. bottles, and in bulk.

Price.—5s. gallon. Packages extra.

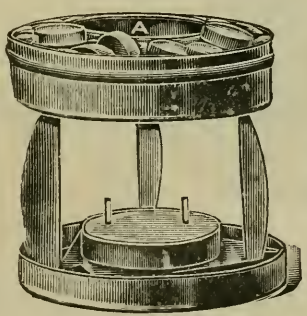
Manufactured by The "Sanitas" Co., Ltd.. Locksley Street, Limehouse, E.

Compact Fumigator.

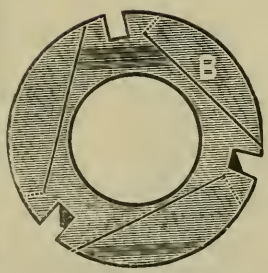
Bronze Medal.

To the Exors. of the late William Sharratt.

Packed for carrying.



Shown ready for use.



Disc to form stand.

Sharratt's "Compact" Fumigator, as sent out to the Disinfector, is a small flat canister 3 ins. by 1 in. Inside the lid is a candle of ample burning capacity to evaporate the water in the humidifying chamber "A," and to vaporise the 30 grains of "Formalide" Tablets with which the Fumigator is charged. Inside the lid is also found a flat disc, cut so that it can be bent to form a stand, as shown in the illustration. Half a dozen may be comfortably carried in the pocket.

Size.—3 in. by 1 in.

Prices.—£4 4s. per gross, or 7s. 6d. per dozen. Carriage paid. Packages free.

Manufactured by The Exors. of the late William Sharratt, Tower Works, Clayton, Manchester.

*

Horlick's Malted Milk.

Silver Medal.

To Horlick's Malted Milk Co.

Horlick's Malted Milk is a blending of milk, wheat, and barley malt, rich in proteids and carbo-hydrates.

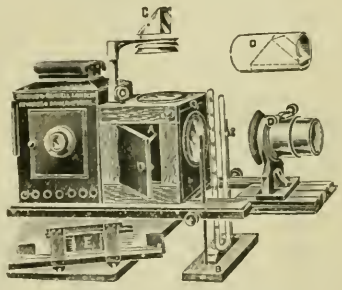
Prices.—1s. 6d., 2s. 6d., and 11s., of all chemists and stores.

Manufactured by Horlick's Malted Milk Co., Slough, Bucks., England.

"Stroud and Rendell" Science Lantern.

Bronze Medal.

To Reynolds & Branson, Ltd.,



This superior Lantern possesses every movement required for the projection of lantern slides, apparatus, and practical experiments in science teaching.

The opening in the sliding base admits for projection tall apparatus, such as eudiometers, &c.; for this purpose an adjustable reversible table is provided, so that small objects may be projected. For horizontal projection the compound objective is provided with a jacket mount with a rack and pinion for focussing.

With Russian iron body, sliding baseboard, two superior objectives, 6, 7, 8, 9, 10, or 12 in. focus, condensers $4\frac{1}{4}$ in. diameter, prism with silvered back which can be used at C or as an erecting prism in mount D, slide carrier, complete in travelling case, without adjustable platform or limelight jet £9 17 6

Ditto., with limelight jet £10 10 0

Ditto., with "Phoenix" Arc Lamp £11 17 6

Adjustable platform for supporting apparatus 7 6

Objectives, interchangeable, from 14 in. to 20 in. focus, from 17 6

Manufactured by Reynolds & Branson, Ltd., 13 Briggate, Leeds.

"Virol."

Silver Medal.

To Virol, Ltd.

Virol.—A highly concentrated food, consisting of bone marrow, red bone marrow of the medullary structure of ox rib and calf bones, malt extract, eggs, and lemon syrup.

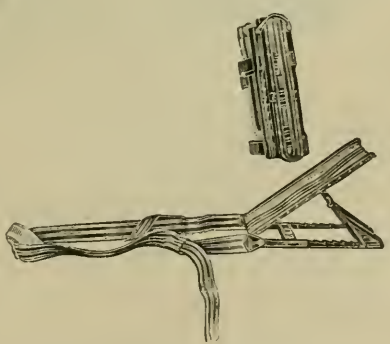
Sold in jars, at 1s., 1s. 8d., and 2s. 11d., and family jars., 11s. 6d.

Manufactured by Virol, Ltd., 152-166, Old Street, London, E.C.

"Princess Christian" Bed Rest.

Bronze Medal.

To Miss L. E. Todd 33, St. Olave's Road, York.



It is collapsible, and when not in use can be folded into a small space for portability or storage.

The frame-work is contrived so that the head and shoulders can be arranged as desired, and can be placed quite erect or at an extremely low angle. The support for the back being canvas it yields to every movement. Pillows can be entirely dispensed with (a great boon in hot climates), or, if preferred, one placed lengthways is all that is necessary to ensure comfort.

A cushioned foot-rest (to prevent occupant slipping down) is attached, and is easily adjustable by lengthening or shortening the girthing by means of buckles.

Price.—21s. each.

In Parts.—Foot-rest only, 5s.

Manufactured by Joseph Norris, Smeaton Street, Hull.

Surgical and Accouchement Dressings and "Mene" Towels.

Silver Medal.

To Robinson & Sons, Ltd.

The "Mene" Accouchements Sets contain—mackintosh sheet 60 in. by 36 in., accouchements sheet 32 in. by 32 in., vaccination pad, umbilical dressing, carbolised petroleum jelly, linen thread, safety pins, fullers' earth, violet powder. One dozen each Nos. 1 and 2 "Mene" Towels, boracic powder.

The "Mene" Towels for ladies.

Manufactured by Robinson & Sons, Chesterfield.

Compressed Sanitary Towels and Accouchement Outfits.

Silver Medal.

To Southall Bros. & Barclay, Ltd.

Compressed Towels.—Reduced by pressure into a very small compass.

Sizes.—(Four) A, B, C and D.

Prices.—1d., 1½d., 2d. and 2½d. each.

Accouchement Outfit Sets containing necessary requisites.

Sizes.—Nos. 1, 2, and 3.

Prices.—10s. 6d., 21s., and 42s. each.

Manufactured by Southall Bros. & Barclay, Ltd., 19, 20 and 21, Lower Priory, Birmingham.

Examples for Object Lessons in Domestic Hygiene.

Bronze Medal.

To Mrs. Florence L. Mather, 9 Warton Terrace, Newcastle-on-Tyne.

A collection of small articles, mostly of a domestic character, and also of homely and home-made diagrams.

Gymnastic Outfits.

Silver Medal.

To Spencer Heath & George, Ltd., 48 & 52, Goswell Road, London, E.C.

Brownlow Germ Filter.

Silver Medal.

To Slack & Brownlow.

Hospital Filter with Thermometer attached, providing hot and cold sterile water of any desired temperature for surgical operations, etc.

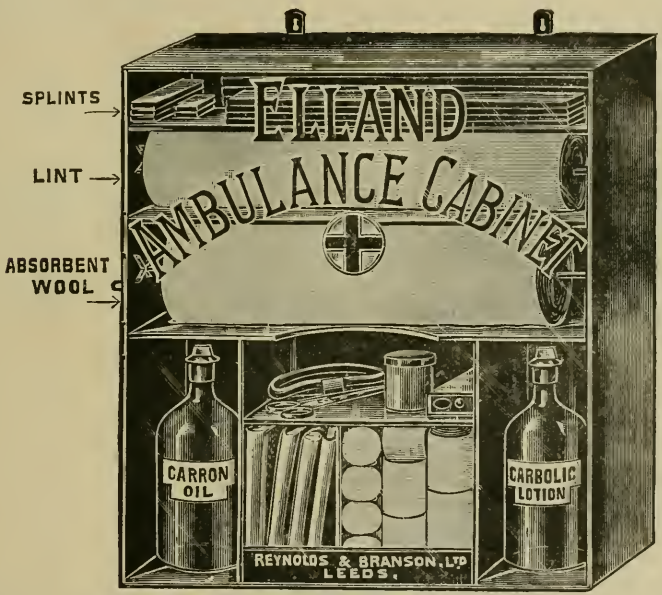
Sizes.—Various. Prices according to size.

Manufactured by Slack & Brownlow, Gorton, near Manchester.

Ambulance Outfits.

Silver Medal.

To Reynolds & Branson, Ltd.



Contents.—Triangular Bandages, Finger Bandages, Two-inch Bandages, Two-and-half-inch Bandages, Absorbent Cotton Wool, Surgeon's Lint, Silk on Card, Adhesive Plaster, Safety Pins, Tourniquet (St. John's), Surgical Needles, Scissors, Splints, Carbolic Lotion, Carron Oil.

Prices.—With Plate Glass Door, 52s. net; with Tin Door, 42s. net.

Manufactured by Reynolds & Branson, Ltd., 13 Briggate, Leeds.

Kitchen Slicer and Peeler.

Bronze Medal.

To S. Strassman, 74, Loftus Road, Uxbridge Road, London, S.W.

Hair, Wool, and Flock Mattresses.

Bronze Medal.

To Hunter & Smalipage, Ltd., Goodramgate, York.

Sizes and Prices.—3 ft., £3 12s. 6d.; 3 ft. 6 in., £4; 4 ft., £4 10s.; 4 ft. 6in., £4 18s. 6d.; 5 ft., £5 10s. 6d.

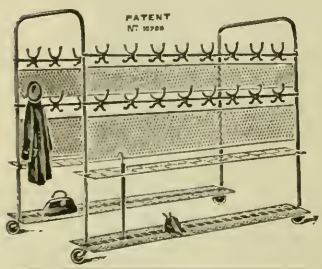
Hair, Wool and Flock Mattresses.

Bronze Medal.

To Brown Bros. & Taylor, Ltd., High Ousegate, York.

"All-Steel" Cloak-Room Fittings.

Bronze Medal.



To The "England" Works.

To accommodate hats, cloaks, umbrellas, boots, bags, etc., also supplied with heating coil and pipes for hot water and steam.

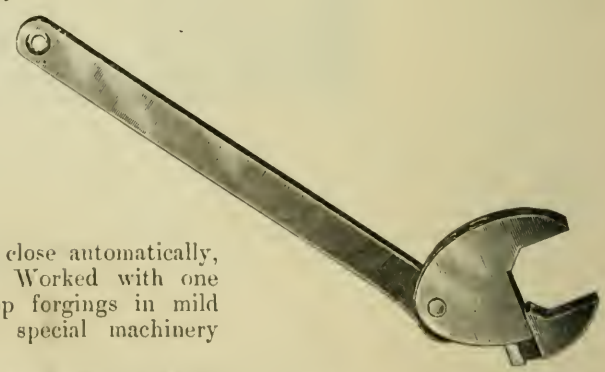
Prices on application.

Manufactured by The "England" Works, 120*a* North Street, Leeds.

"Brownlow" Spanner.

Bronze Medal.

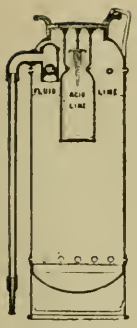
To Slack & Brownlow.



Jaws slide open or close automatically, and are self-adjusting. Worked with one hand. Made from drop forgings in mild steel and machined by special machinery from the solid.

Sizes and Prices.—A, 2s. 9d.; B, 4s. 6d.; C, 6s. 6d.

Manufactured by Slack & Brownlow, Gorton, Manchester.



"Galvo" Chemical Fire Extincteurs.

Bronze Medal.

To The Webb Lamp Co., Ltd.

Made and stocked in four Standard Sizes.

Prices.—1 to 5 gallon size, 27s. 6d, to 70s. each.

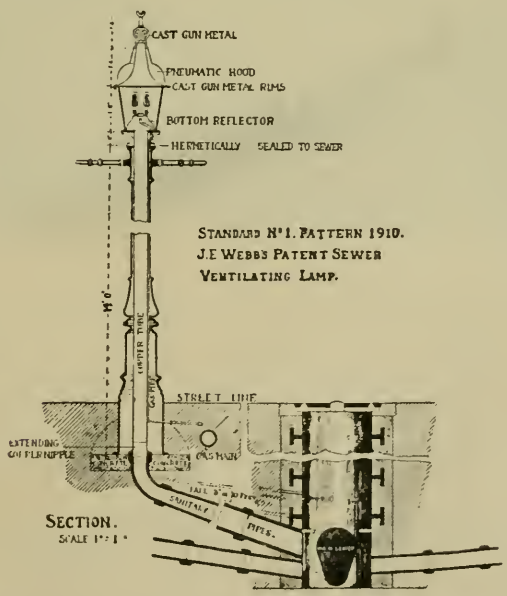
Tested to 130 lbs, hydraulic.

Manufactured by The Webb Lamp Co., Ltd., 11, Poultry, London, E.C.

"Webb's" Sewer Ventilating Lamp.

Bronze Medal.

To The Webb Lamp Co., Ltd.



Manufactured by The Webb Lamp Co., Ltd., 11, Poultry, London. E.C.

Rotary Sprinkler with Direct Acting Tipper.

Bronze Medal.

To Tuke & Bell, Ltd.

The machine is revolved by the falling of the tippers working paul and ratchet, which engage with the cogwheel at the base of the machine.

Sizes.—For filters of 9 ft. up to 40 ft. in diameter.

Prices.—9 ft. to 14 ft., £20; 15 ft. to 19 ft., £22 10s.; 20 ft. to 24 ft., £25: 25 ft. to 29 ft., £27 10s.: 30 ft. to 34 ft., £30; 35 ft. to 40 ft., £35.

Manufactured by Tuke & Bell, Ltd., 69, Leadenhall Street, London, E.C.

Mono-rail Sewage Distributors.

Silver Medal.

To Jones & Attwood, Ltd.

One of the Monorail Sewage Distributors at the Nuneaton Corporation outfall works on filter 1000 sq. yards in area. It is working on a bed of irregular shape, travelling bodily along one side of the central trough, from which it draws its supply of tank effluent. Upon reaching the end of the trough it may either be made to reverse and travel back, or it may swing round the circular end of the filter bed and travel back along the other side of the trough, repeating the operation at the other end of the bed so that its travel is continuous, provision being made for sprinkling the bed with an equal dose of sewage over each unit of area. It is driven entirely by the sewage itself along the one central rail track which carries almost all the load. It will be seen that the time intervals between the doses are equal, but a more important feature is that by sprinkling the sewage continuously along the whole length of the drum, each dose on any unit of area need not be heavy, nor need any part of the apparatus be out of commission, so that it is of great power to work under all conditions.

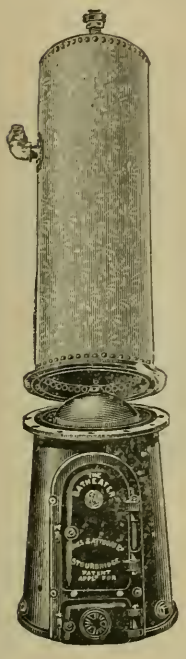
The monorail type is also applicable to circular filters of any diameter.

Manufactured by Jones & Attwood, Ltd., Stourbridge.

The Bath Heater, Boiler and Circulating Cylinder.

Bronze Medal.

To Jones & Attwood, Ltd.



Shewing Boiler and Cylinder detached.

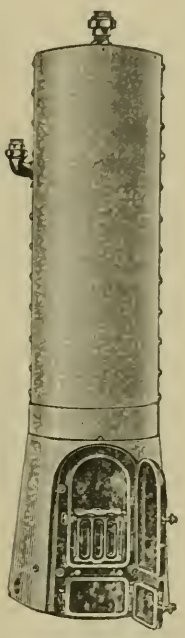
The "Batheater" consists of a sheet steel galvanized storage Cylinder in combination with an independent cast-iron Boiler suitable for fixing in scullery or other convenient position for providing domestic hot water supply for baths, lavatories, etc.

The interior of the Boiler is accessible by simply removing the Cylinder, when both can be readily cleaned, and deposit of any kind removed, thus prolonging the life of the Boiler.

The flanges of Boiler and Cylinder are machine faced, and the joint made with best quality rubber ring.

The space between Cylinder and outer casing is filled with slagwool, thus conserving the heat, economising fuel, and preventing scullery from getting excessively hot.

The fire can be banked up to last 12 to 20 hours, and when testing the No. 3 size the hot water supply was sufficient for three baths with 6 lbs. of fuel per hour; and 48 hours after banking up the fire, the hot water available was ample for a large bath.



Boiler and Cylinder with Casing.

Sizes and Prices.

No.	Description.	High.	Diam.	Unions.	Capacity of hours.		Price, Boiler and Cylinder without casing.			Price, Boiler, Cylinder and Casing complete.		
					Water at 150°.	Number of Baths.	£	s.	d.	£	s.	d.
2	Outside Casing	60	17	1 in.	32 gals.	2	6	0	0	8	0	0
3	„ „	72	17	1¼ in.	48 „	3	7	0	0	9	0	0

Manufactured by Jones & Attwood, Ltd., Stourbridge.

"Ideal" Domestic Hot Water Boiler.

Bronze Medal.

To Wm. Dove & Sons, Parliament Street, York.

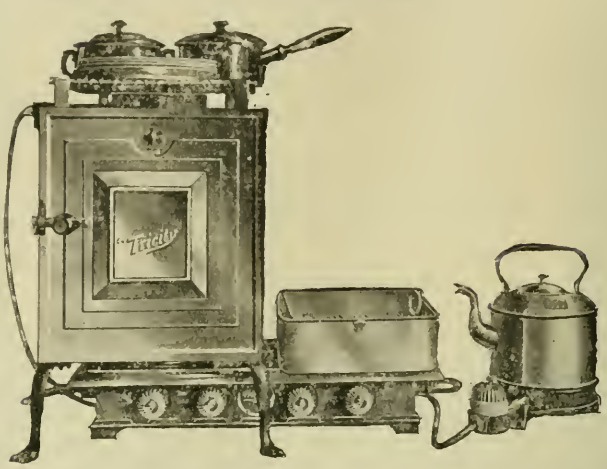
"Ideal" Boilers are self-contained, and require no brickwork. They are portable, being made up of interchangeable sections connected together by tapered nipples. They are made in six different series, and can be made up into 42 sizes, ranging in capacity from 335 to 7,000 sq. feet of radiation. Four sizes are also made for heating water for domestic purposes. The boilers are easy to clean, easy to operate, and have great reserve power.

Prices from £8.

"Tricity" Electric Cooker.

Silver Medal.

To City of York Electric Lighting Department.



Arranged for roasting, grilling, casserole cooking, boiling and plate warming. Each plate is controlled by two switches; one puts the current "On" or "Off," and the other regulates the temperature to "High" or "Low." The handle of the switch indicates its position. When down to "Low" the heat obtained is one quarter of that when the handle points up to "High," and the cost is divided by four also.

Prices.—Duplex cooker, £7 7s.; extension cooker, £3 3s.; oven 14 ins. by 16 ins. by 16 ins., £2 10s.; saucepan, 6 pt., 3s. 6d.; china stewpot, 2½ pt., 5s.; steamer, 1s. 4d.; grill, 10s.; square grease pan, 3s.; kettle, 4½ pt, 4s. 3d.; flat-iron, 5 lb., 5s. 6d.; flat-iron stand, 7d.—Total cost, £14 13s. 2d.

Manufactured by The British Electric Transformer Co., Ltd., 29*a* Charing Cross Road, London, W.C.

Hygienic Value of Exhibit of Electrical Appliances.

Silver Medal.

To City of York Electric Lighting Department, 8, Clifford Street, York.

Gas Cooking and Heating Apparatus.

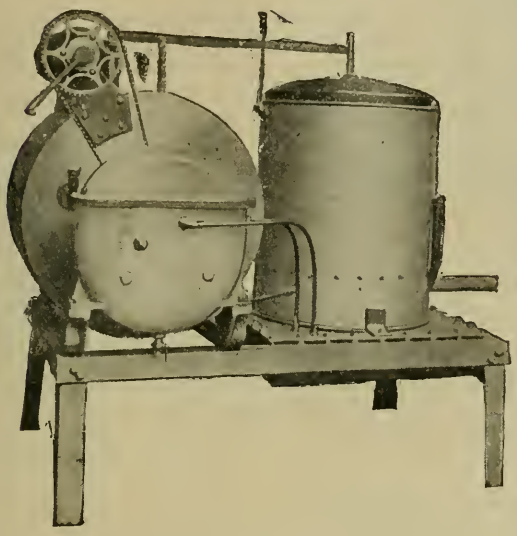
Silver Medal.

To The York United Gas Light Co., Davygate, York.

"The Beacon Light" (Valveless) Petrol Air Gas Generator.

Silver Medal.

To The Beacon Light (Valveless) Gas Generator, Ltd.



This Plant consists of a copper drum with suitable valves fitted inside an air-tight casing (air compressor), which is filled up two-thirds full of water. There is one air inlet, which, having an outside sleeve (Automatic brake), actuated by the lever shown at the top of the sketch, opens and closes the air inlet with each rise and fall of the lever, and thus fulfils the double duty of the air inlet and automatic brake. The axle of the copper drum is carried through the front plate of the casing (air-compressor), and connected with the spindle of a revolving disc-and-bucket feed apparatus inside the petrol-feed chamber. The movements of the drum and the feed disc are therefore identical.

At the rear of the compressing drum (air-compressor) an air-pipe is taken from the centre of the casing having one end standing up inside the compressing drum, in the form of an air-syphon, and having the other end connected to the carburettor at the opposite corner to the petrol feed-pipe. The axle of winding drum actuates the compressing drum and petrol feed by means of a bicycle chain and sprocket wheel (sprocket wheel driven by chain from winding drum).

The feed apparatus consists of a series of buckets—inside the petrol-feed chamber—which deliver the required quantity of spirit into a receiving trough fixed in the petrol-feed chamber, from which the fluid flows by gravitation through the petrol-feed pipe to the carburettor. A special feature of the Beacon Light generator is the patent adjustable quadrant by which the tilt of the feed buckets and hence of the quantity of petrol supplied to the carburettor, can be regulated at will.

The carburettor consists of an air-tight tank, in which are a series of very shallow trays, to the uppermost of which the petrol is supplied by the petrol feed-pipe and overflows to those beneath until completely aerated. Immediately over the carburettor is placed the gas-holder, the core of which, enclosed in its water-jacket, is used as the petrol tank, and is connected to the petrol feed chamber by a pipe shown on sketch. By this arrangement the petrol tank is at all times entirely surrounded by water. The rising and falling of the gas container actuates the lever shown at the top of the sketch and already referred to as actuating the automatic brake.

Sizes and Prices on application.

Manufactured by The Beacon Light (Valveless) Gas Generator, Ltd., 105, Horseferry Road, London, S.W.

Type "K" Water Softener.

Silver Medal.

To William Boby.

Water Softening Apparatus. The process is carried out by means of powder which is not mixed into solution, but distributed directly to the water, the machine being automatic and continuous in action, offering the advantage of requiring little attention and no technical knowledge on the part of the attendant.

Sizes.—From 200 gallons per day up to any desired larger size.

Prices.—These are quoted specially in each case.

Manufactured by William Boby, Salisbury House, London Wall, E.C., in workshops specially built for the purpose at Thornton Heath, Surrey.

"Quine's" Bath Basin.

Bronze Medal.

To Sanitaries, Ltd., Statham Street, Pendleton, Manchester.

"Health" Water Pipes.

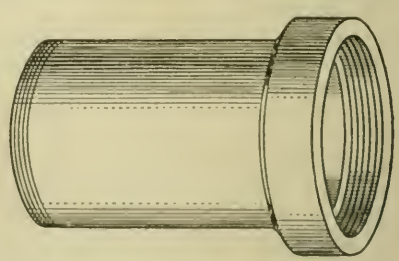
Bronze Medal.

To J. H. Shucksmith, 132, Micklegate, York.

Terra-Cotta Goods, Paving Bricks, and Stone-ware.

Bronze Medal.

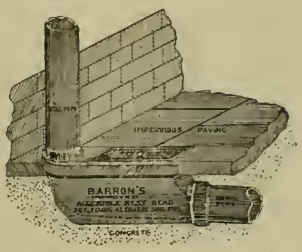
To J. H. Walker & Co., Layerthorpe Bridge, York.



Manufactured by Crossley & Sons, Ltd., Middlesborough.

Access Bend to Foot of Soil Pipe.
Bronze Medal.

To Wm. Harriman & Co., Ltd.



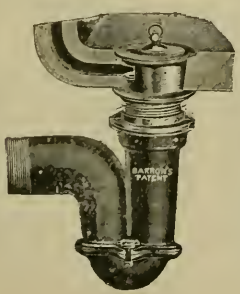
Barron's Accessible Rest-Bend for fixing at foot of soil pipe to remove obstructions and providing access for drain rods between soil pipes and inspection chamber. Also for applying to soil pipes the water, smoke, or air test, etc., etc. Made in best glazed stoneware or strong cast-iron, with coated or galvanised iron air-tight covers and frames; also made with moveable strainer for R. W. pipes, with air-tight cover and frame or grate.

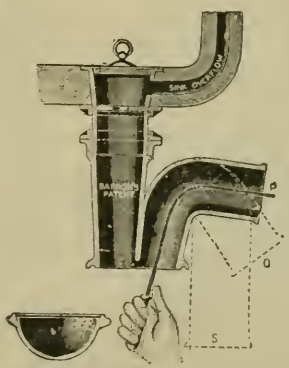
Prices.—On application.

Manufactured by William Harriman & Co., Ltd., 1, Charlotte Square, Newcastle-on-Tyne.

Stoneware Trap for Chemical Laboratory Sink or Lavatory.
Bronze Medal.

To Wm. Harriman & Co., Ltd.





Barron's Patent "Anti-Foul" and Accessible Sink Traps made in fireclay, with acid resisting connections for laboratory use. Also made in brass, and cast-iron galvanised for sinks; baths and lavatories made with plain outlets for caulked lead joint to cast-iron waste; also with tinned outlets for soldered joint to lead waste, and also with screwed outlets for connecting to wrought iron waste.

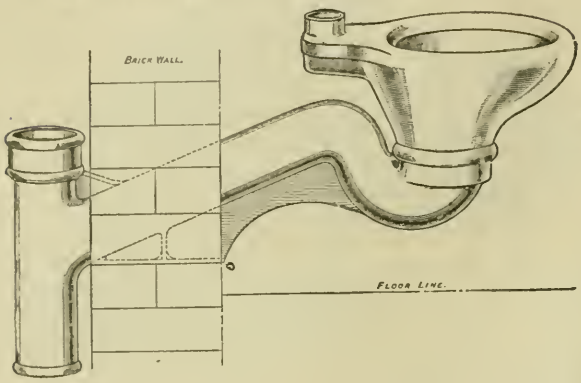
Prices.—On application.

Manufactured by William Harriman & Co., Ltd., 1, Charlotte Square, Newcastle-on-Tyne.

Adjustable Cantilever Soil Pipe Arm.

Bronze Medal.

To Improved Sanitary Appliances Co.



Entirely carried by the wall, resting on the bearing plate.

Made in various lengths.

Can be set at any angle on plan required to suit position of outside perpendicular soil pipe.

Stands clear of the floor.

Only one joint.

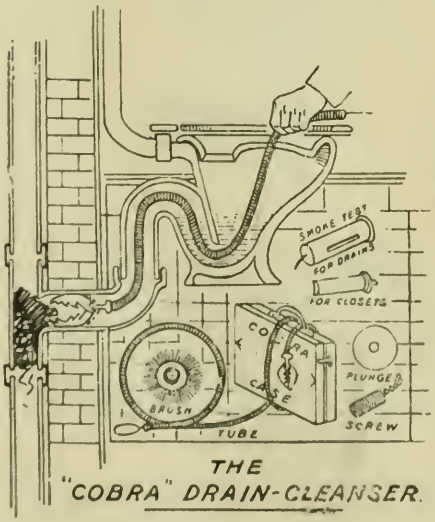
Prices.—In cast iron, covered with Dr. Smith's solution, 26s. each.
" " galvanized .. .. .. 35s. "
" " enamelled outside and inside .. 42s. "
Registered white glazed special pan, with flushing rim .. .. 6s. 6d. each.

Manufactured by The Improved Sanitary Appliance Co., Ltd., Queen's College, Birmingham.

The "Cobra" Drain Cleanser.

Bronze Medal.

To The "Cobra" Drain and Pipe Cleanser, Ltd.



THE "COBRA" DRAIN-CLEANSER.

An apparatus for withdrawing stoppages in sanitary and other pipes without otherwise disturbing same. Obstructions can be caught and withdrawn by means of the toothed head, attached to the flexible tube specially constructed to pass any bends. Brush and screw extractor can also be used if desired, all parts being interchangeable.

Price.—"Cobra" Outfit, complete, in case, 30s. Additional tubing, in 6 ft. lengths, with couplings and wire pulls complete, 9s. per length.

Manufactured by "Cobra" Drain and Pipe Cleanser, Ltd., Ardoyne, Belfast.

Mowbray Earth-Closet Hatch.

Bronze Medal.

To Kirtley & Son, Ltd.

The "Mowbray" Hatch has a metal frame and steel door, the frame being built into the wall, and flush with the face of it, there is no space for the filth to accumulate. The door closes tightly on sole plate, and this largely prevents liquid matter oozing out, defacing the brickwork.

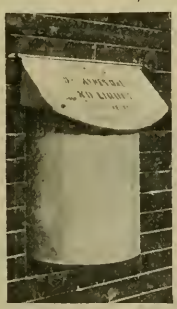
Price.—From 10s. 6d. each, free on rail, Sunderland.

Manufactured by Kirtley & Son, Ltd., Mowbray Buildings, Sunderland.

The Mowbray Tipping Ashbin.

Bronze Medal.

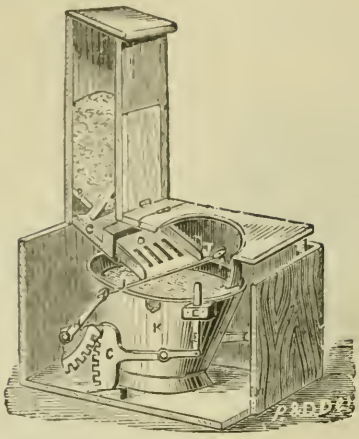
To Kirtley & Son, Ltd.



The frame is made of strong wrought-iron in sections, which are fitted together, and when built into the wall and bonded in the brickwork, it is secure, requires no pointing whatever. The bin is made of strong galvanised steel, and is especially shaped to prevent offensive matter adhering, and it has a waterproof hinged cover fixed above the bin. The Ashbin is fitted in the wall of the back yard, and is opened by the scavengers from outside with a key, and is tipped right over so as to allow the contents to fall into a receptacle beneath, which is then simply lifted up and emptied into a cart standing alongside.

Prices.—21s. 6d., free on rail, Sunderland.

Manufactured by Kirtley & Son, Ltd., Mowbray Buildings, Sunderland.



Earth Closets.

Silver Medal.

To The British Sanitary Co.

When the closet is being used, the seat is depressed about an inch, forcing down the rods EE on each side of the seat, which raise the long and weighted end of the segmental toothed levers G and G, which in turn throw back the long end of the lever H. This duplex action is coupled by the cross bar J, to which is attached the shovel D; this is then withdrawn to the back of the bevelled shelf C, and receives the charge of earth, etc. When the seat is relieved, the weight of the lever brings out the shovel quickly, thus spreading the earth, etc., over the excreta.

Sizes.—40 ins. high, 27 ins. deep, and 23 ins. wide.

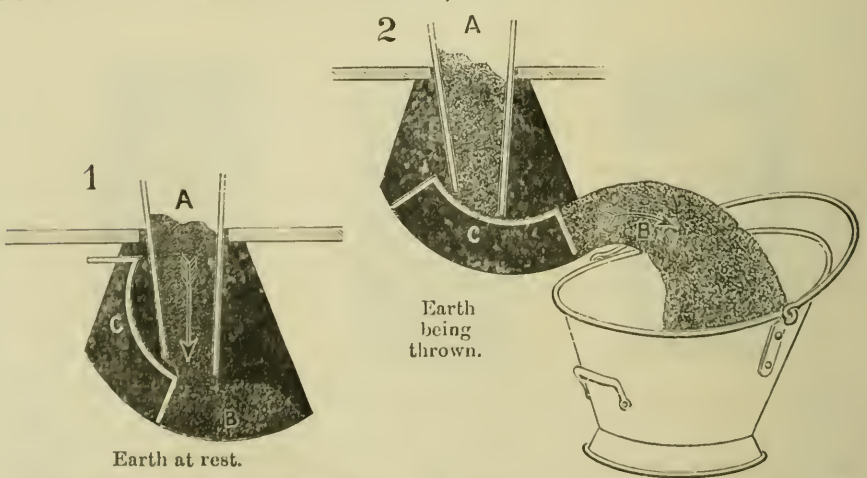
Prices.—47s. 6d. to £6 6s.

Manufactured by The British Sanitary Co., 341 Bath Lane, Glasgow.

Earth Closets, with "Chucker" Action.

Bronze Medal.

To Moule's Patent Earth Closet Co., Ltd.



Earth at rest.

The Chucker action of Moule's new patent is a simple mechanical contrivance, by which a measured quantity of earth is cast or "chucked" forward and somewhat upwards, so that the top and front portion of the contents of receptacle are covered, even when the receptacle is full. The movement is applied to the pull-up and the automatic actions.

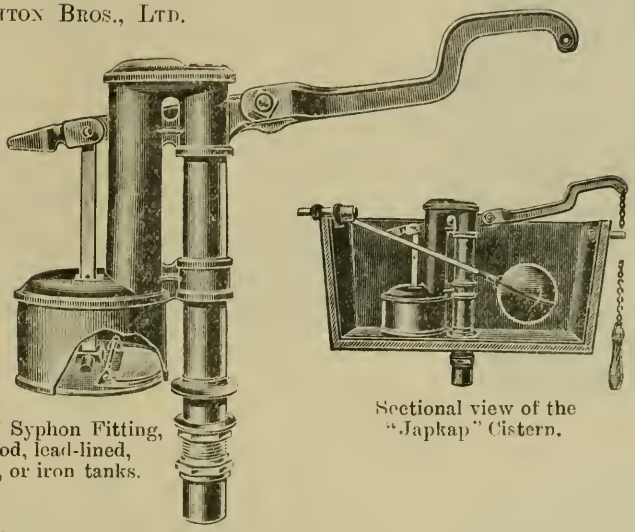
Sizes and Prices.—Various, according to fittings. There are thirty varieties.

Manufactured by Moule's Patent Earth Closet Co., Ltd., 2, Guilford Street, London, W.C.

"Japkap" Waste Preventing Cistern.

Bronze Medal.

To Claughton Bros., Ltd.



"Japkap" Syphon Fitting, for wood, lead-lined, fireclay, or iron tanks.

Sectional view of the "Japkap" Cistern.

Sizes.—Various.

Prices.—From 16s. 7d. to 60s. for complete cisterns.

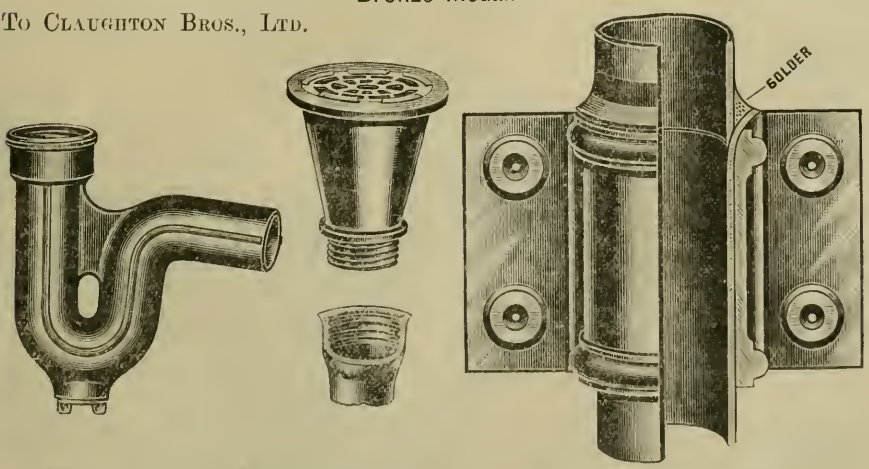
Parts.—Interior fittings only (no ball valve, overflow, or pull): second quality, 1¼in. 7s. 6d., 1½in. 8s. 6d.; first quality, 1¼in. 9s., 1½in. 10s. per set.

Manufactured by Claughton Bros., Ltd., Sanitary Lead Works, Bramley, Leeds.

Sanitary Lead Work.

Bronze Medal.

To Claughton Bros., Ltd.



Manufactured by Messrs. Claughton Bros., Ltd., Sanitary Lead Works, Bramley, near Leeds.

Sanitary Enamels.

Bronze Medal.

To Thos. Parsons & Sons.

Sanitary Enamel Paints, which when dry form smooth, hard, and readily washable surfaces. They can be applied to wood, metal, stone, etc.

Prices.—12s. to 21s. per gallon.

Manufactured by Thos. Parsons & Sons, London and Mitcham.

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Bronze Medal.

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"Graphax" paints (12 kinds), for hard wear outside.

"Thermax," heat-resisting and fireproof paints (4 kinds).

"Q" brand (non-poisonous) paints.

Enamels, coach colours, in undercoat and finishing paints.

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All above paints in 400 standard shades.

Manufactured by Thomas Howse, Ltd., Union Works, Smethwick, Birmingham.

"Ronuk."

Bronze Medal.

To "Ronuk" Ltd.

A sanitary floor polish for the first preparation and maintenance of all kinds of wood flooring, linoleum, furniture, etc., composed largely of antiseptic materials which possess the same germicidal properties as common disinfectants, but without their disagreeable characters of smell and corrosive qualities.

Sizes. Supplied in small tins from 3d. upwards for ordinary household purposes, also large tins in concentrated and liquid forms, for use in hospitals and other large establishments.

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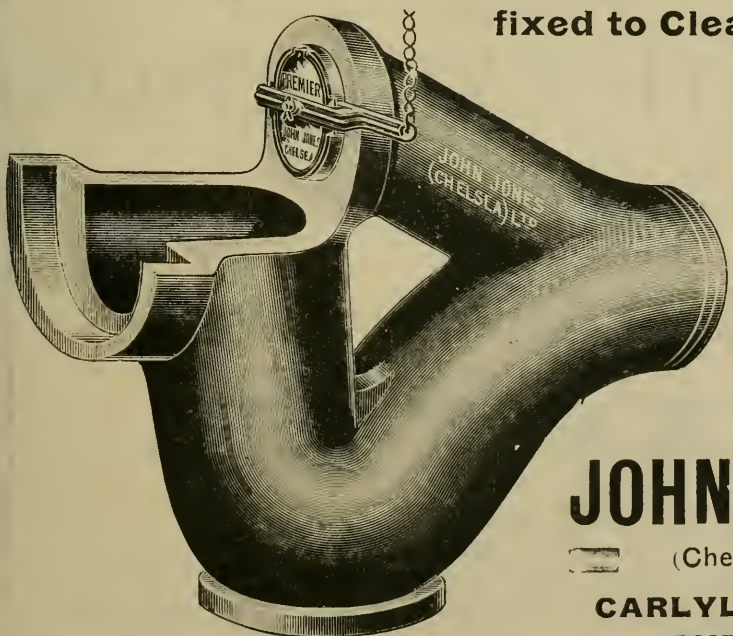

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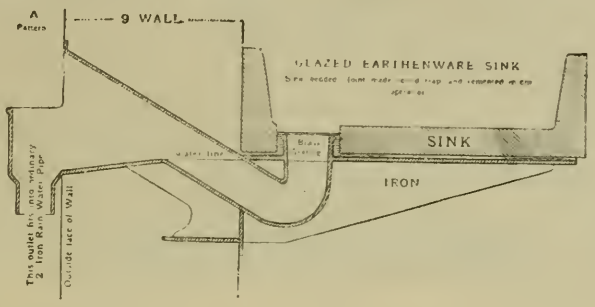
Patent Cantilever Sink Trap, comprising Bracket, Trap, Inspection Arm, and Head, in one casting, and forming a Cantilever. The building of the Cantilever into the wall fixes the four at once, and the Waste-pipe can enter the Head either side.



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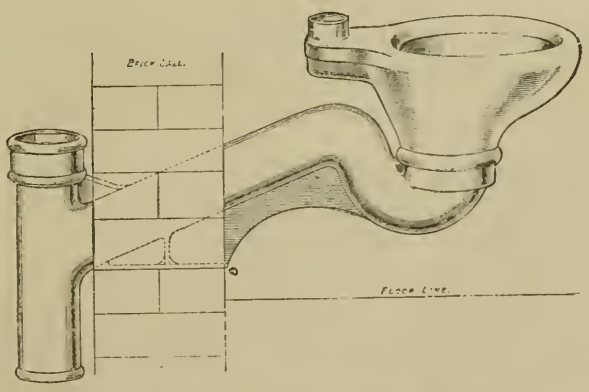
Patent Adjustable Cantilever W.C., fitted with Registered Horseshoe Seat; supersedes all the pedestals on the market. The Trap, Branch Piece, and Soil-pipe junction, all in one casting; being a Cantilever it is clear of the floor. Can be set in wall at any angle to suit position of Soil-pipe, and has only one joint, viz., the bedding of the porcelain pan into the Socket.



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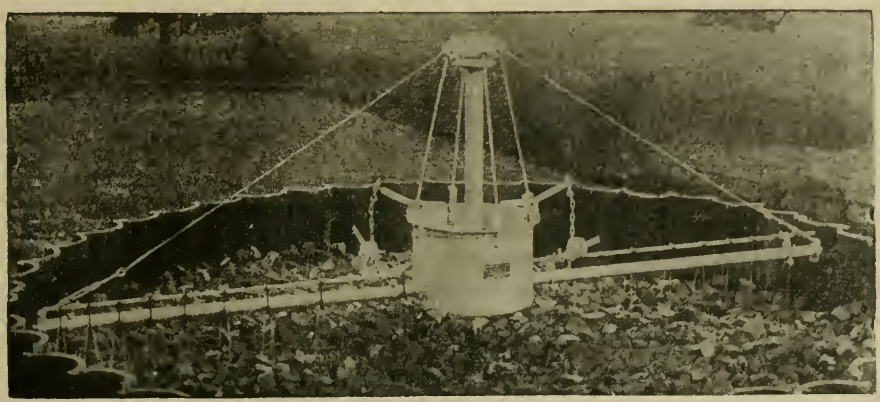

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The ball bearings run in an oil bath, from which grit, dust, and insects are excluded by an oil trap.

Self-regulating—automatically dealing with wide variations in flow.

Orifices self-clearing.

Machine requires attention once in seven to ten days.

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It is not Poisonous. It has a fragrant Odour. It does not stain Linen or the Skin. It can be sprinkled freely is sick-rooms and on the bed. It effectually disinfects the patient by inunction over the whole surface of the body, in Scarlet Fever, Small-pox and Measles; and by an inunction to a lesser degree in Whooping Cough, Diphtheria, Influenza, &c. See Papers on its use in Scarlet Fever, in *British Medical Journal*, March, 1890; *Medical Magazine*, February, 1893; June, 1893; August, 1893; April, 1895; and May, 1895; *Lancet*, April, 1895. It destroys the most offensive smell of cancerous and other diseases. Linen is disinfected and deodorized if sprinkled freely with it before being sent to the wash. It destroys parasites on children; on dogs, sheep, and other animals; also ants, moths, midges, and all insects.

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NEW SANITARY SYSTEM FOR THE SANITATION OF HOUSES AND TOWNS, BY M. P. NADÉINE.

THIS New Economical Sanitary System designed by Captain M. P. Nadéine consists of an apparatus for separating the liquids from the solids of house refuse and fæcal matter from closets and their drainage. The general arrangement of the apparatus is shewn in the following diagram. 1 and 2=main pipes from closets. 1*a*=ventilating pipe from them to ventilating chamber. 3=opening through which the matter falls on to the plate bent to a curve or parabola. 4=the dotted lines shew the usual closet traps. 5=water supply. 6=box into which the liquids run from off the parabola plate and on to wheel (7), turning it round and putting in motion the cog-wheel (8), which turns a spindle on to which paper might fall from the parabola plate. The cog-wheel (8) puts in motion cog-wheel (9) which turns cylinder (11), automatically covering the fæcal matter in box (12) with turf supplied from box (10).

The usual water traps under the closets outlet are not necessary, as under the parabolic plate (dotted lines—4) there is a general trap for all the closets, and this is connected with the ventilating pipe.

The water for rinsing closet basin does not run with the solid fæcal matter, but runs quite separately through the drain pipe (1) on to the parabolic sheet and from that to the box (6) on to wheel (7), and flows away quite clear and without smell. The solids fall off the parabolic plate into box (12), in which they are automatically covered up at once by turf, as explained above. In this box (12) the fæcal matter is at once deodorised by the action of the turf, and at the same time disinfected.

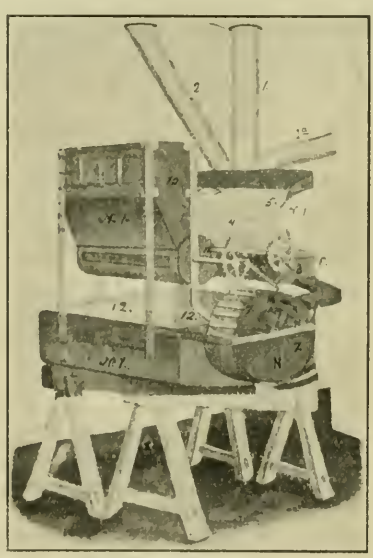


FIGURE 1.

In this way the solids do not decompose, but are mixed with a certain quantity of turf from a dry compost.

It is known that every human being excretes 80 kilos. of solids in the year. For deodorising and mixing with this quantity only 25 kilos. of turf would be required. If the closet pipes of every house were connected up with the Separator they would be absolutely disconnected from the ordinary drains, for liquids and the fæcal solids would pass over the parabolic plate in the Separator, from which the liquids pass to a separate receiver, and from there to the wheel as explained above, putting the apparatus in motion, then passing on to the drain pipes quite clear and absolutely deodorised. The summary of the process consists in the following:—

The Separator for the automatic separation of the solid from the liquid substances passing down drain or water-closet pipes, in order that after disinfection and a treatment with peat, these solid substances could be used as manure.

Biological (anaërobic) cleansing of the water from drain and water-closet pipes, after it has been turned aside by the Separator.

Filters for the aërobic cleansing and aëration of drain and water-closet water.

After such a treatment the disinfected drain-water, clear and free from smells passes down the drain pipes, and instead of polluting them, keeps them well washed.

The necessary apparatus and accessories can be erected in a basement cellar, or in place of cesspool, and do not need any space greater than 6 sq. metres.

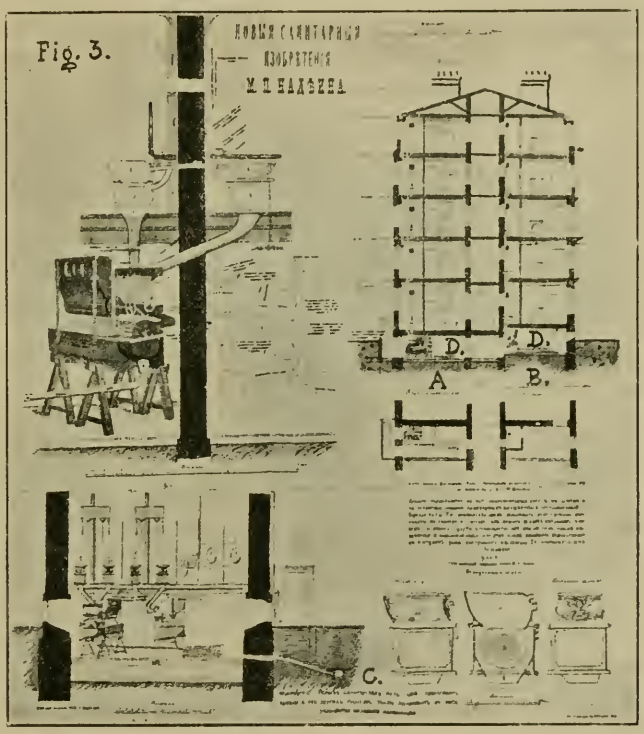
This process aids the preparation of a dry manure, absolutely free from smell, and convenient for transit; obviates the necessity for sewers and cesspools and for joining the closet pipes with the drain pipes, and does away with the need for

large areas for sewage treatment and biological filters, and the possibility of the poisonous gases from the drain pipes penetrating into houses; and lastly, makes it possible to disinfect with peat or by other means, the refuse from kitchens for the purpose of converting it into manure, consequently there is no need for furnaces for burning it.

Nos. 2 and 3, apparatus for cleansing the drain water, could be erected in any other place, even below the surface of the ground. By this new process, the drain-water can be cleansed to a degree that may be found necessary by specialists.

By this system no solids pass into the sewers. The solids removed with the aid of the Separator are used for farming purposes, and the effluent only, free from odour, passing to the sewers.

Fig. 3.



It is well known that the adaptation of water-closets in dwellings has thoroughly changed the sanitation system; about six thousand litres of liquid sewage flows per annum and per person. In order to expedite the removal of this from the buildings a water-carrying sewage system was introduced, which carries the sewage to the boundary of the town or to the irrigation fields, to septic and biological filtering tanks, or to tanks for chemical precipitation. All these systems are used for the separation of the solids, and for purifying the water in which the excreta has been dissolved. By using the separator of Mr. Nadéine's system, such separation and purification is obtained even before the sewage liquid flows from the buildings into the sewers. Before the introduction of the water carriage system and the systems for treating the sewage, even in the last century (from 1830-40), the mechanical engineers and sanitarians looked out for some means to separate the solid matter from the liquid on the spot, in dwellings, but all their efforts were without results. In France, according to Burely, casks with the Richer apparatus have been used for separating solids from the liquid; further, Belicar and Chenaud submitted an apparatus for the separation of liquid from solid excreta, and for widening the end of the soil-pipe in shape of a funnel, along which the liquid would flow.

In Germany, in 1860, Mr. Petenkoffer, Professor of Hygienics of the

Munich University, wrote: "that he paid especial attention to the necessity of having a Drainage System, but that he advised: *not to let the excrements flow to the Drainage pipes*, in order not to pollute the canals and rivers, and to secure the excreta valuable for farming purposes," but later, after many tests, he felt convinced that *it was impossible to separate human excrements from the waters*. Mr. Rudolph Virchow, the well-known scientist of Germany, and other mechanical engineers and sanatarians, also sought a manner to separate excreta from water in the dwellings when installation of water-closets was made, and came to the same opinion as Professor Petenkoffer. Later the separator, as well as other fittings of the "New Sanitary System," have been demonstrated to Professor Virchow, and he honored me with with the following letter:—

"Dear Captain (NADÉÏNE),

"Please accept my appreciation of the simple, but—as much as I am able to "judge by the test made—successful method of separating filthy water from compact "refuse. I presume that this method will prove very useful, especially in small "localities and separate institutions (monasteries, forts, etc.). In large towns the "decision of this question must depend on *finances*. With high respect,

Berlin, *July 30th*, 1892. RUDOLF VIRCHOW."

There is no doubt that the cost of adapting the "New Sanitary System" in buildings will be considerably less than the installation of a special or general sewage system for removing filthy waters behind the town's boundary, as well as other systems for the separation of solid excreta and treatment of sewage, either on the irrigation fields or in the biological filtering tanks: in order to install those it would be necessary to purchase land.

At the annual meeting of the Society of Chemical Industry in England (London, 1891), the President said in his speech:

"It has occurred to me that it might not be uninteresting or useless if, in the "few remarks I shall venture to make, I take for my subject the utilisation of "sewage, a question in which, as a member of the late Metropolitan Board of Works, "I took a great interest for many years, and which I think will sooner or later have "to be dealt with by the chemical engineer, to whom, I am satisfied, we must look to "save the country from the enormous loss which at the present time is incurred by "the want of scientific treatment of, perhaps, the most important waste product of "our time. At the jubilee dinner of the Chemical Society, Lord Salisbury, in his "exceedingly interesting and lucid speech said:—'We compass sea and land in order "to bring manure to make our products grow.'

"Now it may be said that this subject is hardly appropriate to our Society. I "venture, however, to think that this is a mistake, for while it is quite true that "hitherto it has been considered a subject confined to the province of engineers, and "especially of sanitary engineers, it is also true that chemistry has been repeatedly "called in to mitigate as far as possible the injurious effects of sewer gas upon the "atmosphere, and to prevent the water supplied to us from being rendered wholly "poisonous, a result which is sure to occur so long as the circular system of drinking "from rivers which receive sewage from towns continues.

"Is it beyond hope that some chemical engineer will find not only the chemicals, "but some efficient and convenient mode of applying them, by the use of which the "refuse of each house may be quickly desiccated and deodorised, and remain so for a "sufficiently long time to enable collection to be made from house to house, even in "large towns, and the product conveyed to the country without any nuisance being "occasioned, there to be restored to the soil by the farmers?

"The requirements of a successful solution of the problem seem to me to be:

"(*a*) The finding of a chemical or chemicals, the use of moderate quantities of "which shall immediately deodorise excreta, and which shall arrest decomposition "for some days;

"(*b*) The construction of an apparatus with or without the means of separating "the solid from the liquid excreta, for the application of these chemicals which,

"while quickly removing the amounts to a receptacle, shall be simple and cleanly "in its action.

"(*c*) The provision of a receptacle in each house which shall be readily "accessible to the public authority, and which can be conveniently emptied.

"Whether the problem will be solved or not remains to be seen, but the object "I have in view will be answered if I succeed in convincing the members of our "Society:

"(1) That there is a great unsolved problem, involving the health as well as "wealth of the country, worthy of their attention;

"(2) That not good will be done in the direction of sewage utilisation while the "present water carriage system continues; and

"(3) That if public opinion will not admit of any interference with that "system it is useless to devote time and trouble to any question other than how to get "rid of sewage "of water-clos- "at the least "ets, and in "cost to the "general of the "community, "houses—from "and in doing "the kitchen "so, how to avoid "washstands— "spoiling the "it must be "water supplies "directed to "of our growing "the filtering "population. "tank No. 2 for

"For better "desiccation, a- "cleaning the "eration, and "water carriage "ozonising.

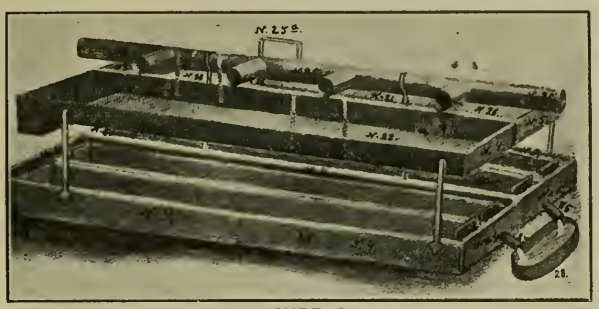


FIGURE 2.

"*Description of Figure 2.*—Pipe No. 25 is united to the pipe from the wheel of "the separator (No. 7). Through four suckers water is carried into filter (No. 22). "In 3–4 hours, by means of a handle (No. 25*a*) the pipe is turned to another adjacent "filter (No. 26), and thus such turning is repeated less often and more often, accor- "ding to requirement. At the bottom of the filters of each box (Nos. 4 and 5) about "2,000 small sink-holes (No. 21) are made, through which the water is carried in the "form of a small rain. In order that the holes shall not be soiled, they are covered "with thin sheets of iron (Nos. 2 and 5) without being connected. From the lower "gutters the water is carried to the pipe (No. 28), from which it is carried out of the "house to the sewage system. The gutters can be installed above the drain pipes, "and the distance between them (Nos. 4 and 5) can be one metre, and more if space "allows it. The bottom of the filtering tank can be filled with coke, coarse sand, "and earth, in order that at the time of passage of the filthy water, substances of "the urine might be mixed with the same."

	Percentage in Original Substance.	Percentage in Dry Substance.	Percentage in Ash.
Dry Substance	21·05	——	——
Ash	1·69	8·04	——
Ammonia	0·14	0·66	——
Nitrogen	1·18	5·63	——
Phosphoric Acid	0·44	2·09	26·01
Potash	0·13	0·63	7·82

Professor TOMS, Manager,
Riga Polytechnical Institute.

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